

January 3, 1957

# The IRON AGE


A Chilton Publication



## Metalworking's Growing Markets

A BLUEPRINT FOR  
MANAGEMENT PLANNING

TURN TO PAGE 2



# A HOT TIP FOR YOU

● Electric arc furnaces represent the greatest degree of refinement of any steel-producing method. More rigid metallurgical controls are possible in the electric furnace and, therefore, assure you the highest, most uniform quality in your steel. A leader in the use of the electric furnace, Copperweld offers the most diversified selection of hot-rolled blooms, bars and billets of both leaded and unleaded alloy and carbon steels.



**COPPERWELD STEEL COMPANY**  
Steel Division • Warren, Ohio

EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N.Y.



# BETHLEHEM STEEL

## Some Highlights of the Year Just Ended



### NEW BLAST FURNACE RISES AT SPARROWS POINT

This new furnace, nearing completion at the year's end, is a key item in the current expansion program at Bethlehem's Sparrows Point, Md., plant, which will give that plant an annual steel ingot capacity of 8,200,000 tons, larger than the present capacity of any other steel plant in the country.

### BETHLEHEM STEELS HELP BUILD PENN CENTER

Products from nearby Bethlehem plants are being used in the buildings in Philadelphia's Penn Center, including steelwork from plants at Bethlehem and Pottstown, high-strength bolts from Lebanon, elevator wire ropes from Williamsport, and reinforcing bars from Sparrows Point.

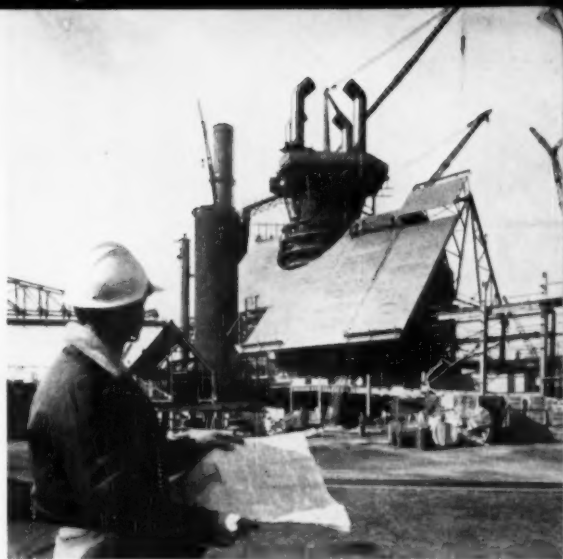
**NEW YORK'S NEW SHOW PLACE.** Opened in the late spring of 1956, the New York Coliseum has total exhibition area equivalent to nine football fields. Bethlehem furnished the 13,000 tons of steelwork and nearly 4,000 tons of concrete reinforcing bars.



### NEW OPEN HEARTH AT LACKAWANNA

This heat of steel is being poured from a new open-hearth furnace, provided under the program of additional facilities at the Lackawanna, N. Y., plant, a part of the current \$300,000,000 expansion program, largest in Bethlehem Steel's history.

**MANGANESE ORE FROM BRAZIL AND MEXICO.** During 1956 the first shipments of manganese ore were brought out of Mexico and Brazil from properties in which Bethlehem Steel has an interest. Below is shown the new ore-loading station on the Amazon River.



### THE "STOCKHOLM" GOES TO SEA AFTER COLLISION REPAIRS

The liner "Stockholm," following repair at Bethlehem's 56th St. Brooklyn Yard of the damage she suffered in her collision with the ill-fated Andrea Doria, passed her sea trials with flying colors and is now back in service.



### TIN-MILL FILM WINS "OSCAR"

"Bright Steel," a movie in color telling the story of Bethlehem tin mill products from raw materials to the finished "tin" cans and other familiar uses, received the first place award among industrial films exhibited at the 1956 Cleveland Film Festival.



### CALIFORNIA SCHOOL FEATURES EXPOSED STEEL

Hillsdale High School at San Mateo, Calif., is typical of numerous new school buildings all across the country featuring exposed structural steel, both indoors and on the exterior. The steel for Hillsdale High was rolled in the Pacific Coast plants of Bethlehem Pacific.



**MAKING STEELMAKING SAFER.** In the latest annual safety contest sponsored by the Metals Section of the National Safety Council, Bethlehem's Lackawanna, N. Y., plant won first place among all large steel plants. The Bethlehem, Pa., plant won second place, and the Johnstown, Pa., plant third. Among other Bethlehem operations honored for safety achievements were plants at Sparrows Point, Md., and Steelton, Lebanon, and Pottstown, Pa.



## Metalworking's Growing

Starred items are digested at right.

### EDITORIAL

Businessman's Ten Commandments .....	7
--------------------------------------	---

### OUTLOOK FOR THE FUTURE

*Another Big Year for Metalworking .....	145
*There Are Eight New Customers a Minute .....	152
*What's Ahead for Steel in Next Five Years? .....	157
*Aluminum Expansion Will Aid Industry .....	161
*Copper Prepares for a Bright Future .....	165
*Biggest U. S. Customer—the Government .....	168
*How Govt. Can Help You Get Market Data .....	172
*Metalworking's Growing Markets .....	203

### REVIEW-FORECAST

Newsfront .....	143
Report to Management .....	179
*Automotive Assembly Line .....	182
*This Week in Washington .....	187
*West Coast Report .....	191
*Machine Tool High Spots .....	193

### SPECIAL FEATURES

Industry Leaders Review Their Markets .....	276
Trade Association Directory .....	318
Conventions and Meetings for 1957 .....	328

### PRICE AND PRODUCTION DATA

Steel Industry .....	336
Nonferrous, Metal Powders .....	343
Pig Iron and Iron Ore .....	336
Ferroalloys, Furnace Bricks .....	349
Iron and Steel Scrap .....	350

### MARKETS & PRICES

The Iron Age Summary—Steel Outlook .....	359
Steel Product Markets .....	360
Comparison of Prices .....	361
Iron and Steel Scrap Markets .....	362
Nonferrous Markets .....	366
Steel Prices .....	369

### REGULAR DEPARTMENTS

Dates to Remember .....	13
Iron Age Salutes .....	195
Iron Age Introduces .....	197
Free Literature .....	266
New Equipment .....	356
Metalworking Briefs .....	402

### INDEX OF ADVERTISERS

Copyright 1957, by Chilton Co.

THE IRON AGE, published every Thursday by CHILTON CO., Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. Price to the metalworking industries only or to people actively engaged therein, \$5 for 1 year, \$8 for 2 years in the United States, its territories and Canada. All others \$15 for 1 year; other Western Hemisphere countries, \$15; other Foreign Countries, \$25 per year. Single copies, 50¢. Annual Review Issue, \$2.00. Carbons: "Ironage," N. Y.

Address mail to The IRON AGE

Chestnut and 56th Sts. Philadelphia 39, Pa.

### OUTLOOK FOR THE FUTURE

#### MEMO TO METALWORKERS: PLAN FOR ANOTHER BIG YEAR P. 145

As New Year begins, economic forecasters see little to fret about, plenty to cheer about. Boom that began in '55 has lost none of its zip. Metalworking industries agree that business will be at least as good as in 1956—and, in some cases, better.

#### THERE ARE EIGHT NEW CUSTOMERS EVERY MINUTE P. 152

Because markets are people it's important to marketing men that U. S.



population is growing at an unheard-of rate. Even more significant are changes and trends within that population.

#### WHAT'S AHEAD FOR NEXT FIVE YEARS IN STEEL? P. 157

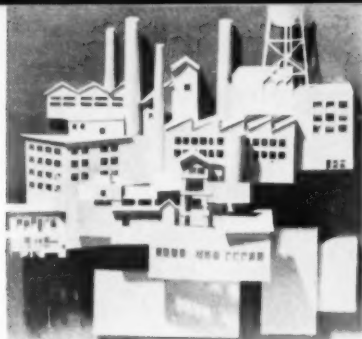
Steel production may exceed 140 million tons in a peak year during the 1957-61 period. However, steel demand is likely to grow more slowly than during the past decade. Capital goods stays steel's No. 1 market.

#### INCLUDE ALUMINUM IN PLANS FOR NEW MARKETS P. 161

Current aluminum expansion will help all segments of the industry. With shortage fears ended, producers and fabricators will introduce products they've had to table until now.

# Markets

T02nd  
ANNUAL ISSUE



## COPPER PREPARES FOR A BRIGHT FUTURE P. 165

Producing capacity of copper in the free world will soar by 32 pct during the next 5 years. It should help stabilize world markets and meet increased demands. The way is also opened for metalworkers to capitalize on new uses and the substitution picture could be altered.

## AMERICA'S NO. 1 CUSTOMER — THE U. S. GOVERNMENT P. 168

Again in front as the nation's biggest buyer of goods and services, the federal government is preparing to spend a hefty \$67 billion plus in the next 12 months, about one-fourth of it for national security.

## HOW GOVERNMENT CAN HELP YOU FIND NEW MARKETS P. 172

The U. S. is spending about \$35 million on major statistical programs. Many of these programs — providing market information on production, employment, income, consumption and investments — contain data essential to market measurement. And most of it is available to all who are interested.

## REPORTS BY INDUSTRY

### METALWORKING'S GROWING MARKETS P. 203

Over thirty markets for metals — users of the products the metalworking industries provide — are reviewed. Articles on each, based on government census figures, interviews with individual firms and trade associations, detail recent marketing conditions and take a look at what's ahead.

Some of the markets covered are: Industrial furnaces, springs, tractors, trucks, appliances, engines, motors, aircraft, construction equipment, barrels and drums, steel and gray iron foundries, screw machine products, bolts, nuts, washers and rivets, oil-field machinery and tools.

## REVIEW—FORECAST

### IT WON'T BE DULL IN DETROIT DURING 1957 P. 182

Big question is whether sales will come back to higher levels. The new philosophy in model changes means an end to faceliftings. Industry will continue its expansion, but at a slower rate. Capital outlays may not be as big. However, tooling for the 1958 models is expected to be almost as extensive as it was for those of 1957.

### FAIR WEATHER SAY BUSINESS BAROMETERS AT CAPITAL P. 187

On this both political parties agree: booming business is expected to continue through 1957. Metalworking companies supplying the armed forces will share in a \$13 billion bonanza. Activity will roll along at high levels.

### WEST COAST SEES EVEN BETTER YEAR IN 1957 P. 191

Next twelve months should see rise in aluminum fabrication, record use of steel. Planemakers have an \$8 billion backlog. Auto companies are expected to spend \$220 million with parts makers and suppliers. Sales of electronic equipment can be looked to hit a new high of \$1.4 billion — one-sixth of the nation's total.

### MACHINE TOOL BUILDERS LOOK FOR \$1 BILLION YEAR P. 193

Need of major companies to improve productivity is a big factor in machine tool optimism. Defense contracts will mushroom in the top defense spending year since the Korean conflict. Shipments could jump as much as 20 pct in '57, will probably rise from 5 to 10 pct.

### INDUSTRY LEADERS SEE MARKETS HOLDING UP P. 276

One of the best sources for information on 1956 developments and 1957 prospects is the metals industry's own trade associations. Therefore, THE IRON AGE has asked about 40 of them for their opinions.

### WANT THE NAME OF A TRADE ASSOCIATION? P. 318

Here's a trade association directory which will help you find organizations, addresses, names of the proper officers to contact, dates and places of 1957 meetings. This up-to-date list is in alphabetical order for convenience.

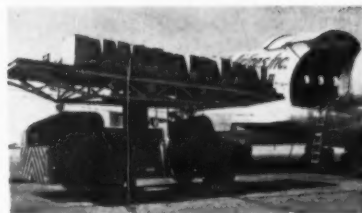
### WHAT'S HAPPENING TO PRICES AND PRODUCTION? P. 335

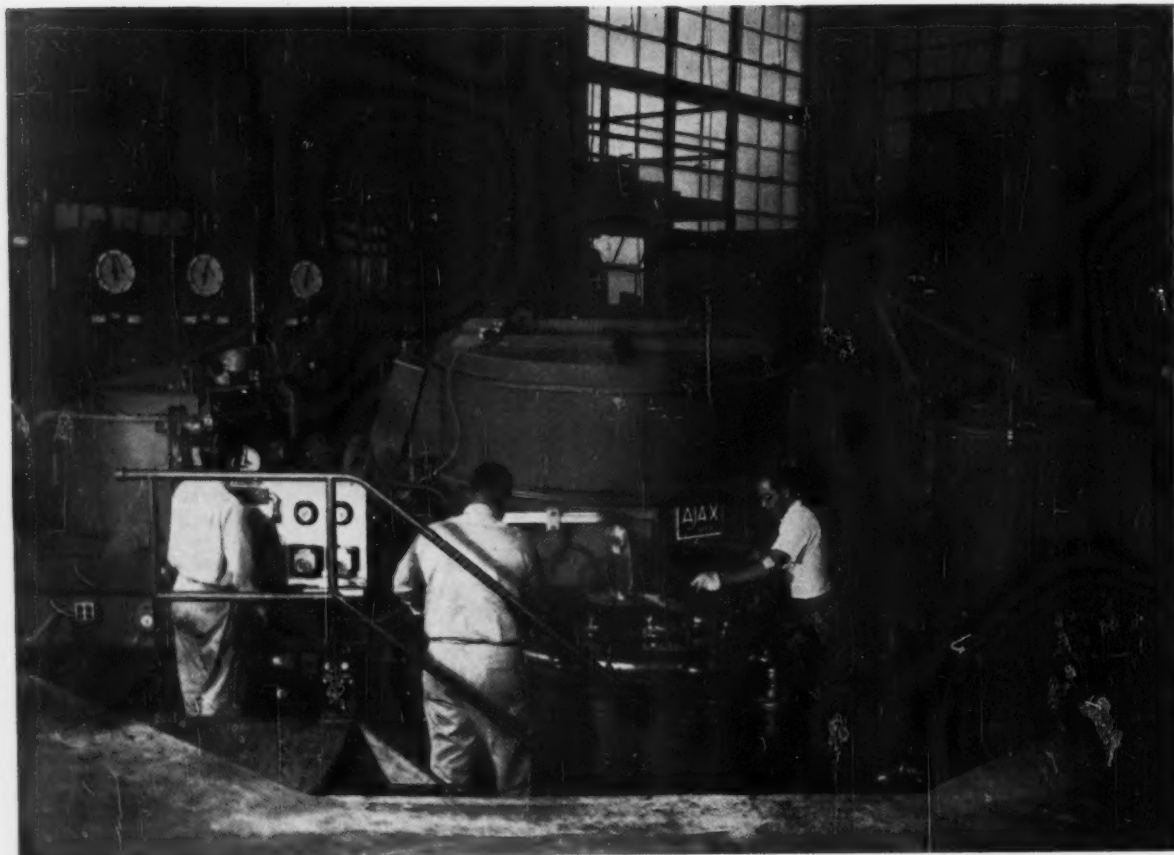
This 16-page price and production section is a handy reference guide plus being a useful statistical source for the year ahead. It covers price and production information from ore to finished metal products.

## NEXT WEEK:

### METAL SHIPMENTS BY FLYING FREIGHT ARE SOARING

Cargos of metalworking goods shipped via one of the major airlines passed all other categories in 1956. Next week's story includes a run-down on products best suited for air shipment. (Baker-Raulang Co. photo.)





## MODERN ALUMINUM BILLET CASTING

Only the best in extrusion billet quality is good enough for **The Himmel Brothers Company**, Hamden, Conn. They produce architectural aluminum extrusions, most of which are subsequently anodized. Their new electric billet casting shop using an integrated group of induction melting furnaces has assured a consistent supply of top quality extrusion billets.

Billets are turned out at the rate of 2000 lbs. per hour by one supervisor and two men. Clean and cool working conditions, extensive automation, and negligible furnace maintenance provide a high return on this investment.

We should be pleased to give you more facts about this modern way of melting aluminum.

**AJAX**  
TAMA-WYATT

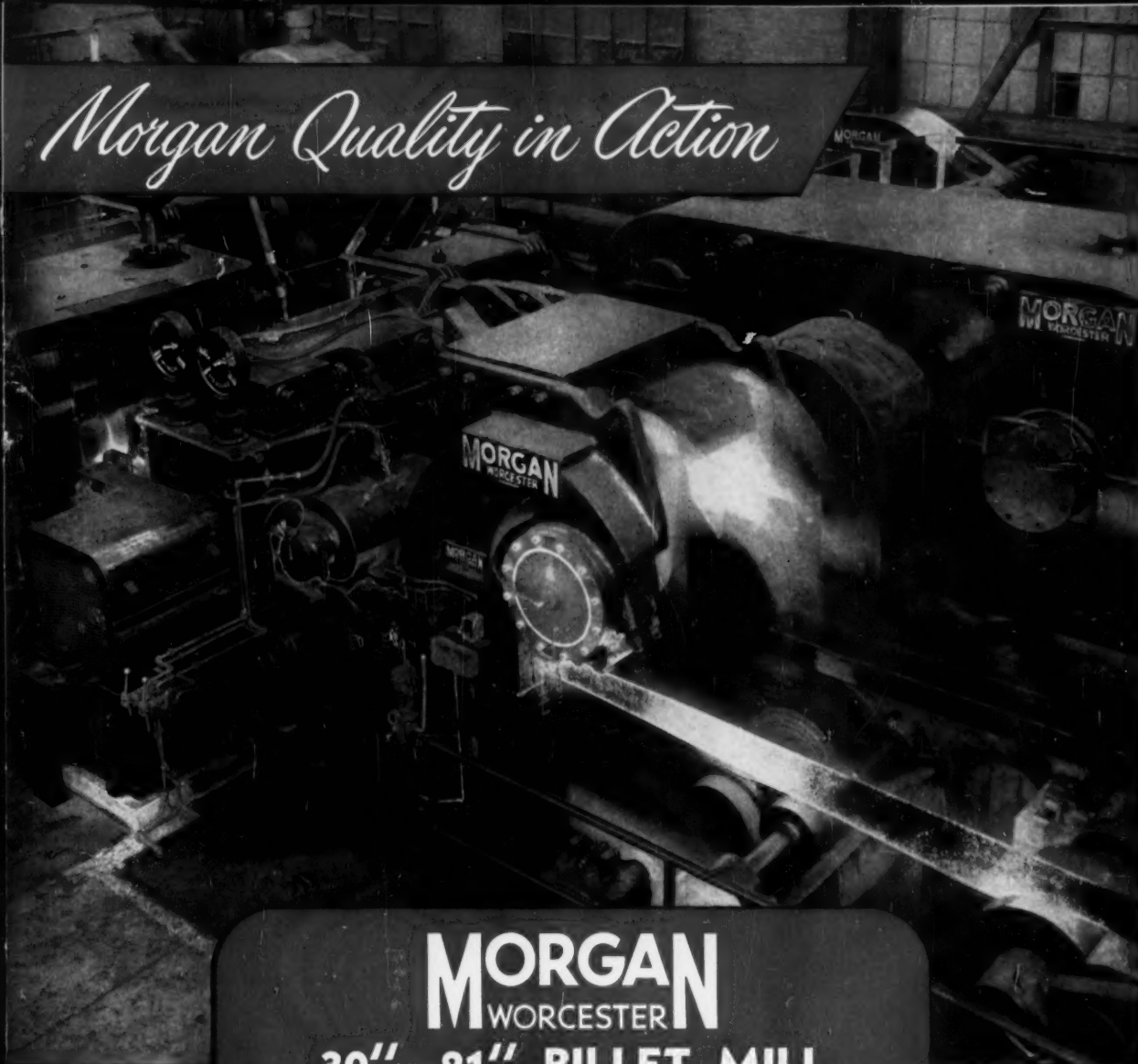
**AJAX ENGINEERING CORP., TRENTON 7, N. J.**



**INDUCTION MELTING FURNACE**

AJAX ELECTRO METALLURGICAL CORP., and Associated Companies  
AJAX ELECTROTHERMIC CORP., Ajax-Northrup High Frequency Induction Furnaces  
AJAX ELECTRIC CO., The Ajax-Hultgren Electric Salt Bath Furnace





*Morgan Quality in Action*

**MORGAN**  
WORCESTER

30" 21" BILLET MILL

**with No.5 Electric Flying Shear in Action**

**MORGAN CONSTRUCTION CO.**

**WORCESTER, MASSACHUSETTS**

ROLLING MILLS    MORGOL BEARINGS    GAS PRODUCERS  
WIRE MILLS    EJECTORS    REGENERATIVE FURNACE CONTROL

**MORGAN MORGAN MORGAN MORGAN MORGAN MORGAN MORGAN MORGAN**  
WORCESTER WORCESTER WORCESTER WORCESTER WORCESTER WORCESTER WORCESTER WORCESTER

**MORGAN MORGAN MORGAN MORGAN MORGAN MORGAN MORGAN MORGAN**

In Hotel Statler, New York City...

## **ARMCO ZINCGRIP STEEL GUARDS CONDUITS WHERE MAINTENANCE MEN CAN'T GO**



Production of conduits requires severe lock seaming, but the zinc coating on Armco ZINCGRIP Steel stays tight and unbroken. That's why conduits like this one are expected to last the life of the air conditioning system—even where inaccessible to maintenance men.

Miles of conduits and ductwork are required in the modern air conditioning system that serves 2,200 rooms of the giant hotel.



Conduits for the new air conditioning system in New York City's Hotel Statler are made of Armco ZINCGRIP® Steel. According to the project engineer in charge, this is why:

"The galvanized bond of Armco ZINCGRIP Steel is completely reliable. We can lock-seam without causing damage to the coating. This means that *conduits can be placed in inaccessible parts of the building . . . in vertical rises between floors for example, without further attention for an indefinite period. They'll last the life of the system itself.*" And further . . .

"In those areas where conduits are exposed, their attractive appearance does not detract from the residential nature of the hotel."

### **20-YEAR RECORD**

For more than 20 years, drawn and severely formed parts of many kinds of products have been made of Armco ZINCGRIP Steel at cost savings.

The reasons:

1. No flaking or peeling of the patented hot-dip coating.
2. Elimination of finishing after fabrication.
3. Production advantages of ZINCGRIP coils.

Many years of experience in hundreds of plants back up this fact: *Anything that can be done with sheet steel can be done with Armco ZINCGRIP.*

## **ARMCO STEEL CORPORATION**



817 Curtis Street, Middletown, Ohio • Sheffield Steel Division • Armco Drainage & Metal Products, Inc. • The Armco International Corporation



Chestnut and 56th Sts.

Philadelphia 39, Pa.

Sherwood 8-2000

GEORGE T. HOOK, Publisher

#### EDITORIAL STAFF

TOM C. CAMPBELL, Editor-in-Chief  
GEORGE F. SULLIVAN, Editor

Managing Editor E. C. Beaudet  
News-Markets Editor J. B. Delaney  
Technical Editor J. J. Obrzut  
Engineering Editor W. G. Patton  
Machinery Editor E. J. Egan, Jr.  
Metallurgical Editor P. M. Unterweiser  
Asst. News Mkts. Ed. R. D. Raddant  
Art Director J. A. Degen

Associate Editors: J. G. Long, C. B. Moore, F. J. Starin. Assistant Editors: P. J. Cathey, R. Schullin, J. A. Moore. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; T. L. Carry, Detroit; G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regelmbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. M. Edmonds, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. A. Coughlin, Seattle; F. Sanderson, Toronto; F. H. Harley, London, England; Chilton Editorial Board: Paul Wootton, Washington representative.

WASHINGTON EDITORIAL OFFICE  
Washington 4....National Press Bldg.

#### BUSINESS STAFF

Production Manager Warren Owen  
Director of Research Oliver Johnson  
Circulation Mgr. W. M. Coffey  
Promotion Manager Richard Gibson  
Asst. Research Dir. Wm. Laimbeer

#### REGIONAL BUSINESS MANAGERS

Chicago 1 T. H. Barry, W. R. Pankow  
360 N. Michigan Ave. Randolph 6-2166  
Cleveland 15 Robert W. Watts  
930 B. F. Keith Bldg. Superior 1-2860  
Columbus 15, Ohio Harry G. Mumm  
Veque-Lincoln Tower Capital 1-3764  
Dallas 18 G. A. Brauningner  
8557 Eustis St. Davis 7-4176  
Detroit 2 W. J. Mulder  
103 Pallister Ave. Trinity 1-3120  
Los Angeles 28 R. Raymond Kay  
2420 Cheremoya Ave. Hollyd 3-1882  
New York 17 C. H. Ober, C. T. Post  
100 E. 42nd St. Oxford 7-3400  
Philadelphia, B. L. Herman, J. A. Crites  
56th & Chestnut Sts. Sherwood 8-2000  
Pittsburgh 22 T. M. Fallon  
1502 Park Bldg. Atlantic 1-1832  
San Francisco 3 Don May  
1355 Market St. Underhill 1-9737  
W. Hartford 7 Paul Bachman  
62 LaSalle Rd. Adams 2-0486  
England Harry Becker  
National Provincial Bank Chambers,  
15 Grafton St., Altrincham, Cheshire.  
One of the Publications Owned and  
Published by Chilton Co. (Inc.), Chest-  
nut & 56th Sts., Philadelphia 39, Pa.

#### OFFICERS AND DIRECTORS

Joseph S. Hildreth, Ch. of the Board  
G. C. Busby, President

Vice-Presidents: P. M. Fahrendorf,  
Harry V. Duffy; Treasurer, William H.  
Vallar; Secretary, John Blair Moffett;  
Directors: George T. Hook, Maurice  
E. Cox, Frank P. Tighe, L. V. Rowlands,  
Robert E. McKenna, Irving E. Hand,  
Everitt B. Terkune, Jr., R. W. Case, Jr.,  
John C. Hildreth, Jr.

Indexed in the Industrial Arts Index  
and the Engineering Index.



## EDITORIAL

### Businessman's Ten Commandments

♦ COMMERCE AND INDUSTRY become more complicated each year. And they will become more automatic as time goes by. That is progress. In this process we can't — as individuals — afford to become lost in the shuffle. Retention of some old fashioned ideas might dilute the organizational trend towards dull groupism.

As mature business people we should:

¶ Keep ourselves from making our business or occupation a god who demands total obedience to the exclusion of all else.

¶ Refuse to worship our accomplishments as something sacred and apart from everyday things.

¶ Refrain from using our business as an excuse for not doing things we should do and doing things we should not do.

¶ Work five or six days a week. The seventh should be a day of rest, change, or meditation.

¶ Never so forget our family or parents to the extent that they become just a part of the business routine.

¶ Not murder enthusiastic, spirited, and genuine attempts of others to be constructive in their daily work.

¶ At no time confuse our loyalty to our company with our general interest in our industry: there is a difference.

¶ Never become part of a deal that will not stand up under close inspection by our conscience.

¶ Leave the bearing of false witnesses against our competitors to those whose level of mentality merits it.

¶ Make our own way, tend to our own business and give the other fellow an equal chance to do the same.

It is no easy job living up to any commandments we might make for ourselves. These are merely ideas. Each of us will do a far better job of checking on himself. After all, we know ourselves — or should.

We are all part of society but that does not mean that we should be so wrapped up in the group goals that we forget we are human beings. Nothing could be so dangerous in the future as the creation of a faceless, efficient and quite dull way of life.

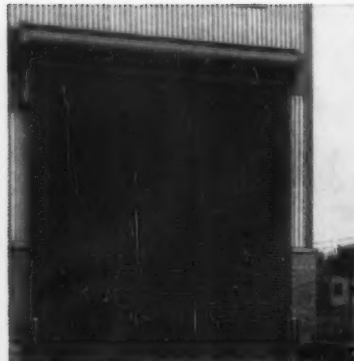
Least of all should this begin in business!

*Tom Campbell*

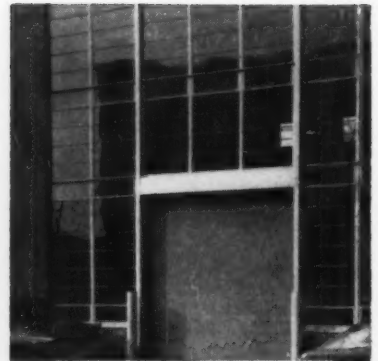
EDITOR-IN-CHIEF



**1** Where hoists or conveyors travel close to the doorway, or where side-walls or ceiling areas are not usable for door storage.



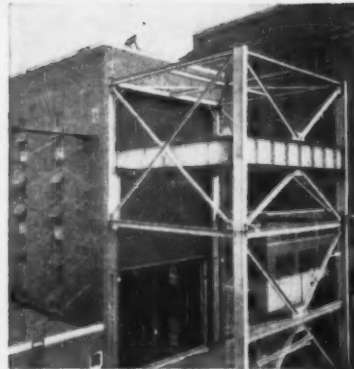
**2** Where ceiling-high openings, or economies of low-headroom construction, suggest doors mounted on exterior walls.



**3** Where surrounding window or glass areas would be blocked off or made unsightly by opened doors, tracks, or rails.



**4** Where door areas must remain clear from jamb to jamb and floor to ceiling, for unimpeded materials-handling.



**5** Where openings are too wide, too high, or too big to make anything but a Kinnear Steel Rolling Door practical.



**6** Where openings are at an angle, or horizontal, or where no sidewall or headroom areas permit storage of opened doors.

# Seven Conditions That Call For Kinnear Steel Rolling Doors



**7** And wherever you want to be sure of longer-lasting, low-maintenance, space-saving door efficiency that costs less in the long run.

Only a few advantages of the all-steel interlocking-slat door with coiling upward action, *originated by Kinnear*, are shown above. But the features that make Kinnear Rolling Doors best for these conditions make them best for any installation!

These famous doors, whether opened, closed, or in operation, leave all surrounding space usable at all times. When closed, they protect openings with a continuous curtain of steel. And instead of sacrificing door efficiency to do it, *they increase efficiency tremendously!*

You can have these Kinnear advantages with either manual or motor operation. Motorized doors can be equipped with push-button switches at any number of points.

On top of all this, every Kinnear Door is REGISTERED — an advantage proved through more than 50 years. Complete details are permanently on file at the Kinnear Plant. Accidentally damaged parts of any Kinnear Door can be replaced at any time — *even after 30, 40, or 50 years of daily service*. Your Kinnear Doors are never "orphans". Get rid of your door problems. Write for full details on Kinnear Rolling Doors.

## KINNEAR

ROLLING DOORS

Saving Ways  
in Doorways

**The KINNEAR Manufacturing Co.**  
Factories: 1760-80 Fields Ave., Columbus 16, Ohio  
1742 Yosemite Ave., San Francisco 24, Calif.  
Offices and Agents in All Principal Cities



January 3, 1957

**dear editor:**

### Likes The Service

Sir:

Please send me tearsheets of the articles "Get Better Wear Resistance With Ceramics" and "How Measurements Lead to Effective Quenching," in your Nov. 22nd issue.

I wish to express my appreciation to the Readers Service Dept. for distributing reprints of important articles. It is very commendable and a valuable service of THE IRON AGE. G. R. Leghorn, Chief Metallurgist Belmont Plant, Western Gear Corp., Belmont, Calif.

### Inspection Know-How

Sir:

I have just read your Sept. 27th issue of THE IRON AGE and the person who wrote the article "How to Get More for Your Inspection Dollar" really knew what he was talking about and I would like very much to have a copy for my personal use.

A note at the bottom of p. 224 indicated a limited number of extra copies available. Hope I am not too late with my request.

If an extra copy is available, I would appreciate it if you would mail it to me at my home address. M. L. Erb, 115 S. Duke St., Millersville, Pa.

You're not too late. Metallurgical Editor Paul Unterweiser gets the credit for this one.—Ed.

### Finishing Handbook

Sir:

We have noticed your very excellent articles and also your Metal Cleaning & Finishing Handbook in the June 28, 1956, issue of THE IRON AGE.

Would you please send us approximately ten (10) reprints of

this Metal Cleaning & Finishing Handbook which starts on p. 105 and runs through p. 128. M. D. Beck, Vice President, Commerce Petroleum Co., Chicago 8, Ill.

Copies are still available.—Ed.

### Lubricants

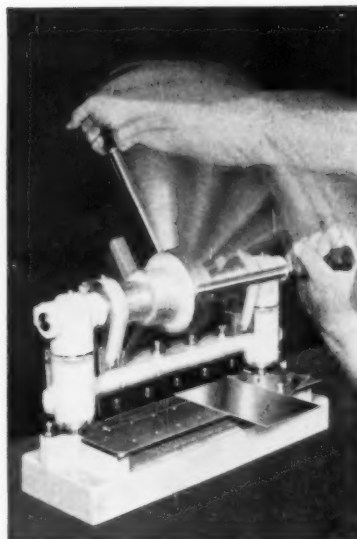
Sir:

In the Oct. 25 issue of THE IRON AGE, there is an excellent article on Drawing Lubricants, starting on p. 103. We find this is an excellent article, and would be very glad to have ten copies of reprints if they are still available. L. M.

### Extrusion








Sir:

We would appreciate your sending us four reprints of each article on pps. 94 and 95 in your Oct. 4 issue entitled "Carbide Dies Hoist Output On Hot Extrusion Line" and "Shape Impact-Extrusion Slugs From Ingot." We found these articles to be most interesting. R. J. Hess, Vice President, Lake Erie Engineering Corp., Buffalo 17, N. Y.



## Want PRECISION SHEARING at HIGH SPEED?

Check these features and you'll want a DI-ACRO® SHEAR

-  **METALS**
  - **PRECISION**—strips less than .025" wide accurately sheared. Thousands of parts exactly duplicated.
-  **RUBBER**
  - **CUTTING SPEED**—rivals that of power machines.
-  **MICA**
  - **RATED CAPACITY**—16 gauge.
-  **PAPER**
  - **EASY TO OPERATE**—a woman can operate it.
-  **PLASTIC**
  - **CHOICE OF MODELS**—available in four sizes. Widths from 6 to 24 inches. Four power models also available.
-  **LEATHER**
  - **ENGINEERING SERVICE**—always at your disposal.
-  **SCREEN MESH**
  - **PORTABLE**—readily moved.
  - **RUGGEDLY BUILT**—backed by one year warranty.
  - **DELIVERY**—immediate on most models.
  - **COST**—that's good too.

\*pronounced Die-ack-ra

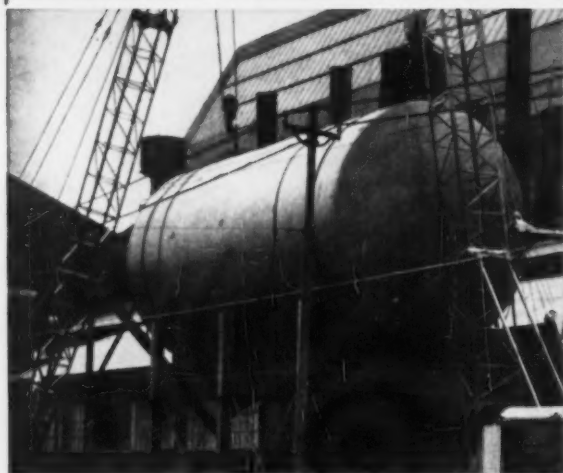
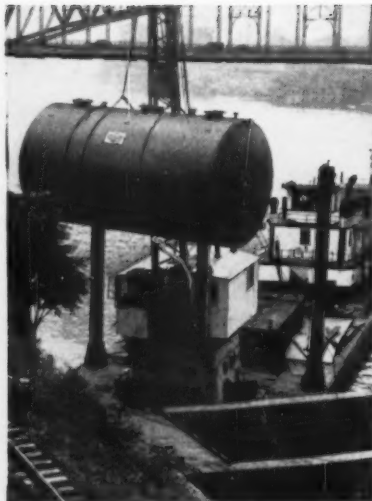
**WANT MORE INFORMATION?** New catalog gives complete details on all hand and power operated Di-Acro machines.

Consult the yellow pages of your phone book for the name of your nearest Di-Acro distributor or write us.

Creators of  
"DIE-LESS DUPLICATING"

O'NEIL-IRWIN MFG. CO.  
302 8th AVE.  
LAKE CITY, MINN.





#### GOODYEAR INDUSTRIAL PRODUCTS



### - Specified Typical Uses for PLIOWELD

(corrosion-resistant rubber lining or covering)

Tanks—rectangular, round, square, open top, flat or dished heads

Tank Covers—flat, box, radius types

Truck Tanks

Tank Barges

Railroad Tank Cars

Fans—blades, wheels, housings

Flanged Pipe and Fittings

Fume Hoods and Ducts

Scrubbers and Towers

Air Purifiers

Agitators

Troughs and Chutes

Continuous Vacuum Filters

Pumps

Filter Frames

Miscellaneous Fabricated Items

PLIOWELD can also be used to combat abrasion

## G.T.M. completes another "turn-key" tank lining job

FOR stream pollution abatement, an eastern steel mill needed a number of big tanks to collect and treat waste pickle liquor—four 45,000-gal. storage tanks, three 41,000-gal. storage and leaching tanks, and five smaller tanks.

The G.T.M.—Goodyear Technical Man—recommended lining the tanks with PLIOWELD—especially compounded corrosion- and abrasion-resistant rubber. He also agreed to handle the complete job "from blueprints to saddles." This included procurement of tanks, lining at fabri-

cator's plant, and movement by barge and truck to customer's plant. And this involved hiring movers and equipment, obtaining rights of way, moving telephone and electrical wires, making police and traffic arrangements.

The net result was a "turn-key" job, delivered as ordered, with no problems for the customer. Like to have your lining job handled the same way? Just turn it over to the G.T.M.! Contact him through your Goodyear Distributor, or write Goodyear, Industrial Products Division, Akron 16, Ohio.

**PLIOWELD TANK LININGS by**

# GOOD YEAR

THE GREATEST NAME IN RUBBER

Ploweld—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

## fatigue cracks

### A Real Cutup

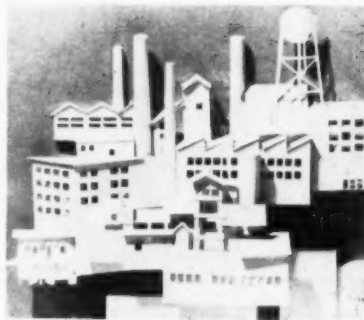
We've always thought our art director, John Degen, a real cutup. But this time he's really outdone himself.

The photos here show the great paste pot and scissors job he did to produce what we think (and hope you agree) is a beautiful Annual issue front cover.

### 3-D Design

At right is the finished three-dimensional design before color was added. In the middle of the page is the same model taken from top and bottom.

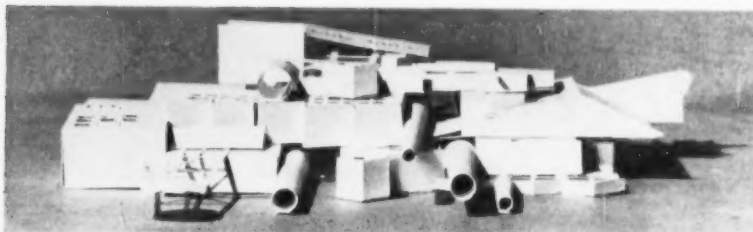
Now one of our old salt editors thought the top shot looked like a battleship lying on its side after Pearl Harbor. The bottom view re-



Here's the end . . .

sembled a California-type ranch house to another more home-minded individual.

What it really shows is 5 to 6 layers of paper glued together and assembled on a base board. It's very simple. All you need to do it



Here's the beginning . . .

is a paste pot, scissors, paper, a photographer who knows how to bring out light and shadow and an art director with a terrific imagination and an eye for color.

Color is one thing (among many others) our Swiss art director's got. When he's not designing 3-D's or listening to classical music he can be found nostalgically mixing such weird concoctions as the Swiss flatland traveler and mountain goose. No, the recipes are not available for publication.

## Southern's STOCK LIST SERVICE



HELPS YOU MEET  
TODAY'S  
"EMERGENCY"

When you need fasteners in a hurry, most of the time you can't afford to wait until somebody makes them for you. With Southern Screw's Stock List at your fingertips, you can know in a moment whether Southern can fill your need from its permanent stock of over One Billion U. S. A.-made fasteners.

For every buyer of fasteners, and especially those buyers who get hurry-up calls, the Southern Stock List will be a welcome addition to your source file.

Write today for your copy of Southern Screw's Stock List and free samples of your current needs. Address Box 1360-1A, Statesville, N. C.

P. S. Even if you don't see your requirement listed, Southern is constantly adding to its stocks—and chances are Southern has it stocked by the time you want it—now!

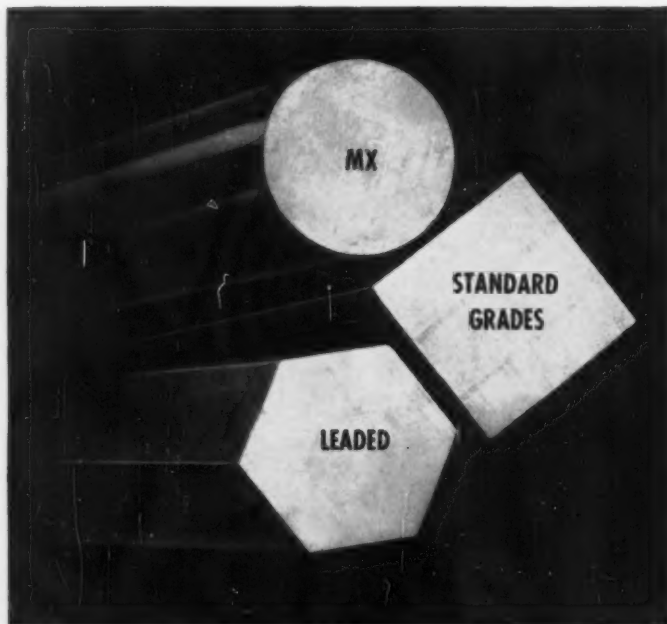
Southern Screw offers also, the new Warehouse Stock Guide for fast, local service from the Southern Warehouse nearest you. This up-to-the-minute Southern service is free upon request and entails no obligations whatsoever.

Wood Screws • Stove Bolts  
Machine Screws & Nuts • A&B  
Tapping Screws • Roll Thread  
Carriage Bolts • Dowel Screws  
Hanger Bolts • Wood & Type U  
Drive Screws



Warehouses: NEW YORK • CHICAGO •  
DALLAS • LOS ANGELES

**You get the right  
COLD FINISHED BARS  
for your job . . .**



**. . . plus exclusive  
“GRADE MARK SERVICE”**

With a network of 18 well-stocked warehouses in convenient key cities from coast to coast—all of them carrying COLD FINISHED BARS in a wide range of types, grades, finishes, shapes, and sizes—we can give you the fastest possible service on anything you may need.

And, U. S. STEEL SUPPLY is the only place where you can get “Grade Mark Service.” The cold finished bars in your order will be shipped to you in neatly strapped bundles, and each bundle will carry a seal which clearly

shows the grade of the bars in that particular bundle. Thus, without altering your stocking procedure in any way, you save time and trouble in identifying and handling each grade. *This exclusive plus service is available to all our customers at no extra cost.*

One quick phone call to U. S. STEEL SUPPLY will get the exact bars you need. Your order will be filled and shipped from the warehouse nearest the specified point of delivery.

**U. S. STEEL SUPPLY**

**DIVISION**

General Offices: 208 So. La Salle St., Chicago 4, Ill.



Warehouses and Sales Offices Coast to Coast

**UNITED STATES STEEL**



## dates to remember

### JANUARY

**American Electroplaters Society**—Winter meeting, Jan. 12, Sheraton Penn Hotel, Pittsburgh. Society headquarters, 445 Broad St., Newark 2, N. J.

**Institute of Scrap Iron & Steel, Inc.**—Annual convention, Jan. 13-16, Eden Roc and Fontainebleau Hotels, Miami Beach, Fla. Society headquarters, 1729 H St., N.W., Washington, D. C.

**Society of Automotive Engineers, Inc.**—Annual meeting, Jan. 14-18, The Sheraton-Cadillac and Statler Hotels, Detroit. Society headquarters, 29 W. 39th St., New York.

### EXPOSITIONS

**American Society for Metals**—March 25-29, Los Angeles.

**American Foundrymen's Society**—May 6-10, Cincinnati.

**The Society of Plastics Engineers, Inc.**—Annual national technical conference, Jan. 16-18, Hotel Sheraton-Jefferson, St. Louis, Mo. Society headquarters, 34 E. Putnam Ave., Greenwich, Conn.

**Steel Plate Fabricators Assn.**—Annual meeting, Jan. 17-18, Palmer House Hotel, Chicago. Assn. headquarters, 79 W. Monroe St., Chicago.

**Malleable Founders' Society**—Semi-annual meeting, Jan. 18, Hotel Cleveland, Cleveland. Society headquarters, 1800 Union Commerce Bldg., Cleveland.

**Compressed Gas Assn., Inc.**—Annual meeting, Jan. 21-23, Waldorf-Astoria, New York. Society headquarters, 11 W. 42nd St., New York.

**American Standards Assn.**—Gaillard seminar on industrial standardization, Jan. 21-25, Engineering Societies Bldg., New York. Society headquarters, 70 E. 45th St., New York.

**American Boiler Manufacturers Assn. & Affiliated Industries**—Mid-winter meeting, Jan. 22, Hotel Statler, Cleveland. Assn. headquarters, 1571 W. 117th St., Cleveland.

**Metal Lath Manufacturers Assn.**—Annual meeting, Jan. 23-24, Cleveland Hotel, Cleveland. Assn. headquarters, Engineers Bldg., Cleveland.

**Industrial Heating Equipment Assn., Inc.**—Annual meeting, Jan. 28-29, The Shoreham Hotel, Washington. Assn. headquarters, 1145 19th St., N.W., Washington, D. C.

**Cutting Tool Mfrs. Assn.**—Annual meeting, Jan. 29, Detroit Yacht Club, Detroit. Assn. headquarters, 416 Penobscot Bldg., Detroit.



# FIGHT FIRE FAST!

## KEEP A KIDDE EXTINGUISHER NEAR EVERY HAZARD!

Move fast against fire the instant it strikes, and you can stop it with little damage. But let it get a head start, and you may lose equipment, buildings... or your life.

Be selective in your choice of fire extinguishing equipment. Choose Kidde! You can be certain of rugged construction, simple operation, and absolute dependability.

For more than thirty years, Kidde fire extinguishers have been built to the most exacting specifications, have passed the most rigorous of tests, have the highest ratings. There is not a better-made extinguisher on the market today.

In ease of operation Kidde

extinguishers also stand unsurpassed. The trigger-release grip on Kidde carbon dioxide and dry chemical extinguishers is the fastest and most natural to use. With it, even inexperienced operators can move swiftly and confidently against a blaze, extinguishing flames in seconds. You simply aim the horn, pull the trigger, and fire's out. Models with squeeze valves available too.

Finally, there is the Kidde service organization. In cities everywhere there are trained Kidde representatives who are ready to service your extinguishers.

For more information about the line of Kidde extinguishers, write for Kidde's P-8 Catalog.

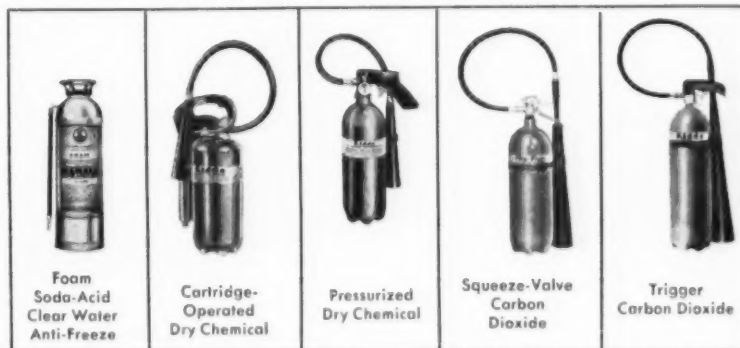
# Kidde



**Walter Kidde & Company, Inc.**  
149 Main St., Belleville 9, N. J.

Walter Kidde & Company of Canada Ltd., Montreal—Toronto

The words 'Kidde', 'Lux', 'Lux-O-Matic', 'Fyre Freez' and the Kidde Seal are trademarks of Walter Kidde & Company, Inc. and its associated companies.



Foam  
Soda-Acid  
Clear Water  
Anti-Freeze

Cartridge-  
Operated  
Dry Chemical

Pressurized  
Dry Chemical

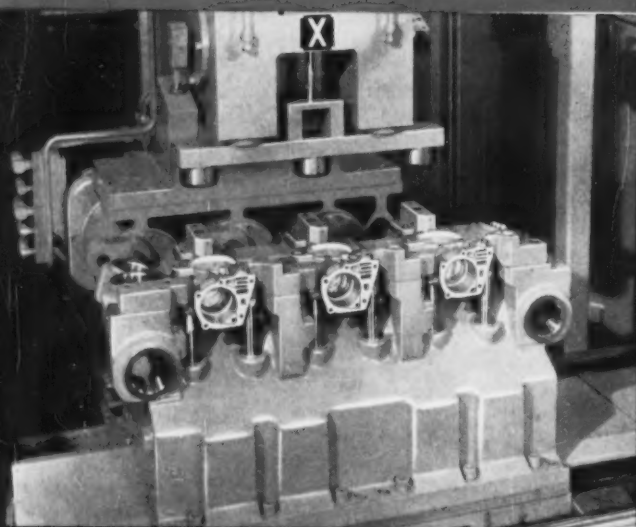
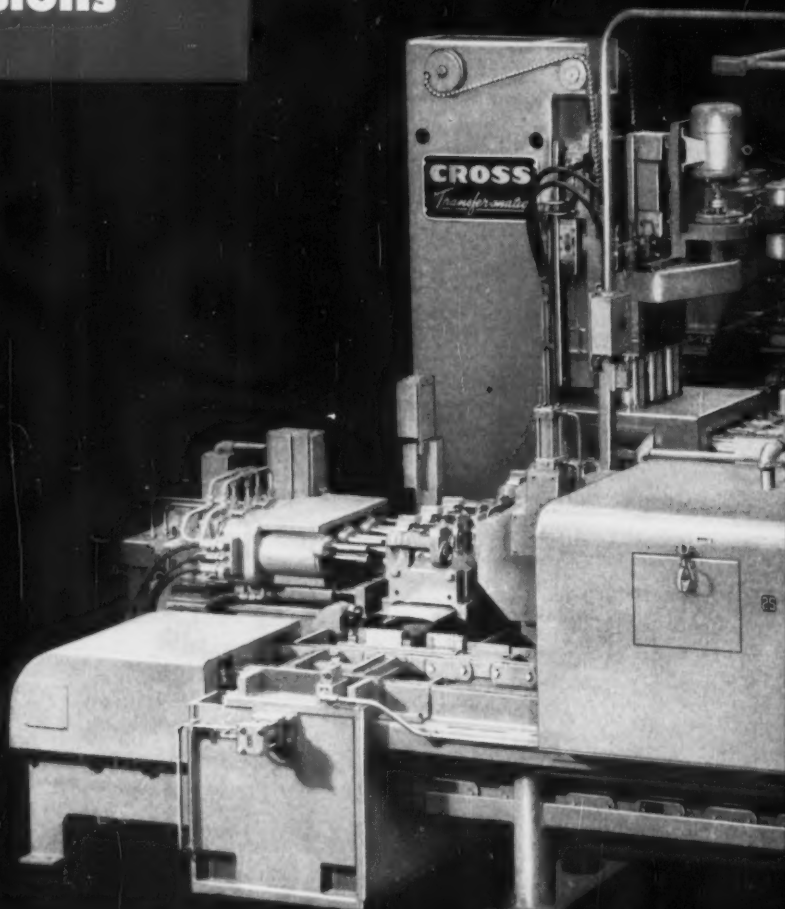
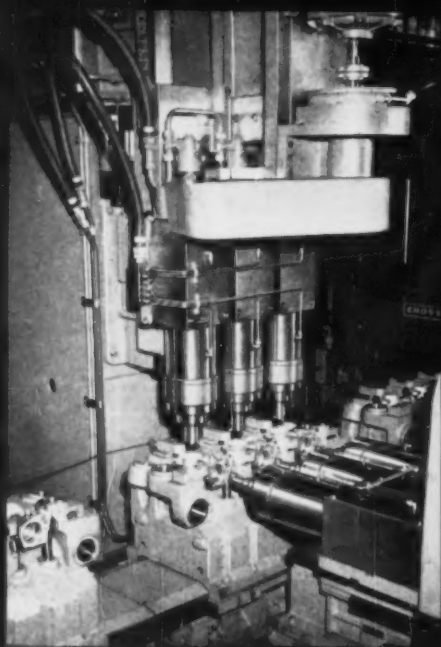
Squeeze-Valve  
Carbon  
Dioxide

Trigger  
Carbon Dioxide

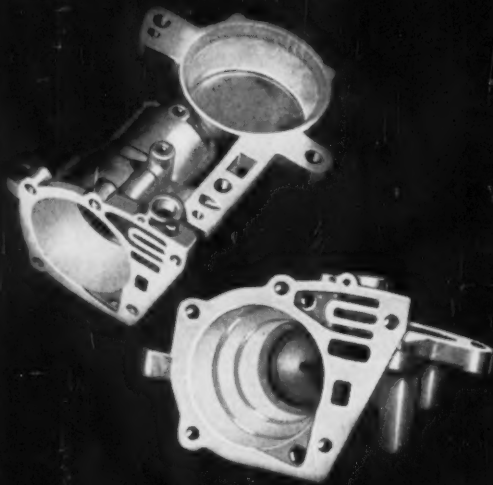
Be sure to see the complete line of Kidde Portables at Booth No. 1347, at the Eighth Plant Maintenance Show, January 28-31, 1957, Cleveland, Ohio.

# Completely Machines Servo Valve Bodies for Automatic Transmissions

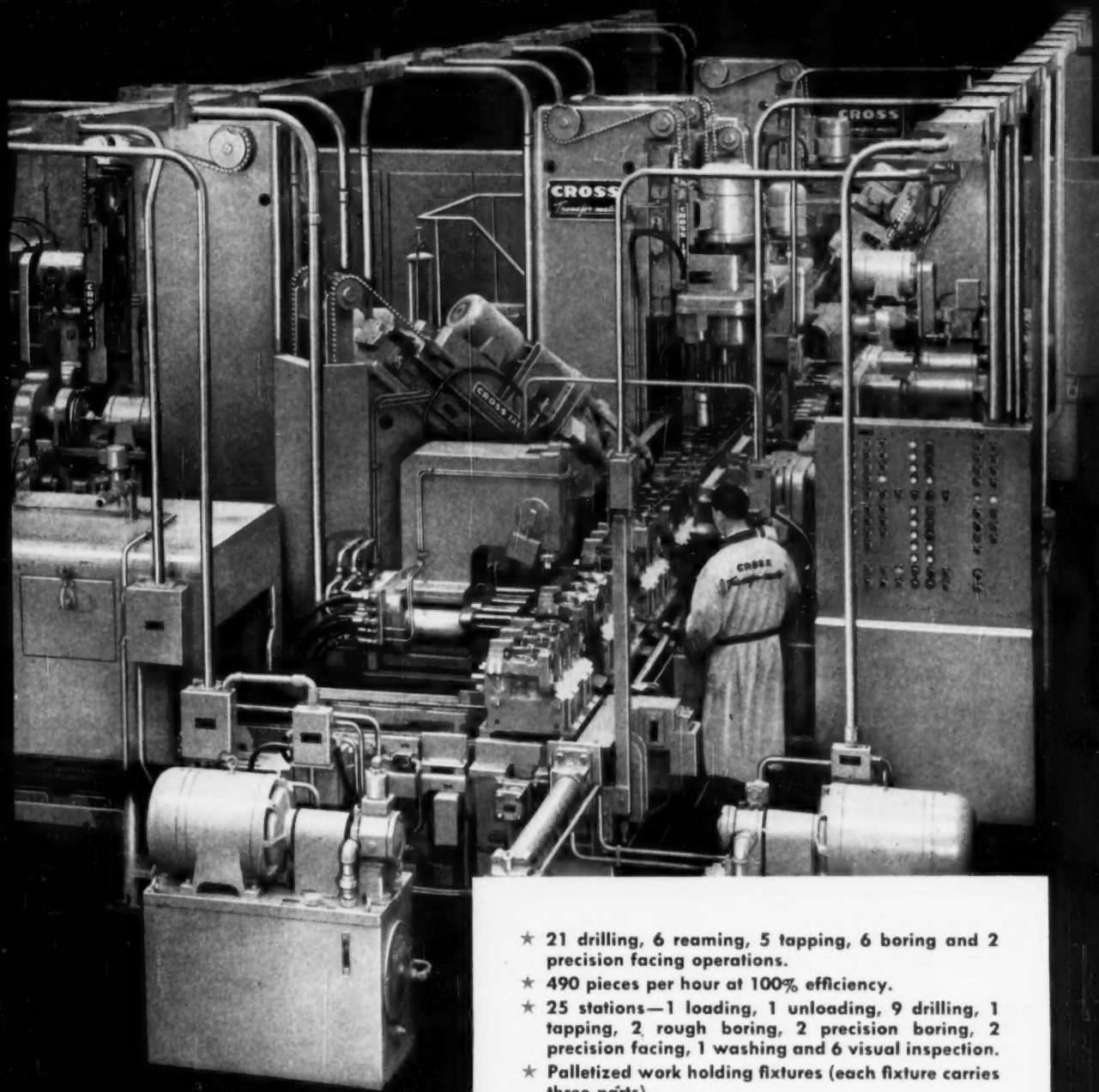
The final precision boring station.



The loading station. Part locations are checked automatically by Unit X to assure proper clamping.



## *Another Transfer-matic by Cross*



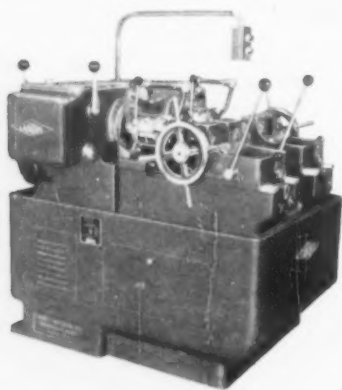
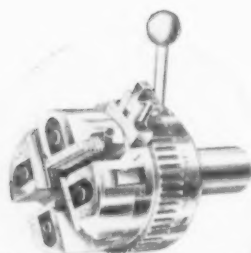
Established 1898

THE **CROSS** CO.  
*First in Automation*  
DETROIT 7, MICHIGAN

- ★ 21 drilling, 6 reaming, 5 tapping, 6 boring and 2 precision facing operations.
- ★ 490 pieces per hour at 100% efficiency.
- ★ 25 stations—1 loading, 1 unloading, 9 drilling, 1 tapping, 2 rough boring, 2 precision boring, 2 precision facing, 1 washing and 6 visual inspection.
- ★ Palletized work holding fixtures (each fixture carries three parts).
- ★ Unloading unit for removing parts from fixtures and placing them on conveyor.
- ★ Complete interchangeability of all standard and special parts for easy maintenance.
- ★ "Building Block" construction to provide flexibility for design changes.
- ★ Other features: automatic washing unit for fixtures; construction to JIC standards; hardened and ground ways; hydraulic feed and rapid traverse for milling, drilling and boring; individual lead screw feed for tapping.

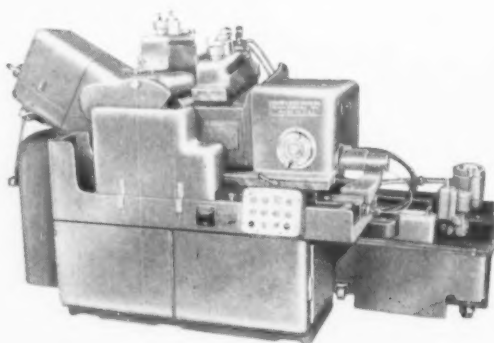


## Cutting, Grinding, Tapping,



### Cutting....

The 8C LANDMACO—one of five new Thread-Cutting machines designed for precision threading of workpieces from  $\frac{3}{16}$ " to  $6\frac{3}{4}$ " in diameter. • Above is the new 2" LANDMATIC—one of the many Standard and Special Thread-Cutting Heads designed for application to Automatics and Turret Lathes.



### Grinding....

The CENTERLESS Thread Grinder for continuous thru-feed grinding of threads from  $\frac{1}{16}$ " to 2" in diameter at mass production rates. Infeed grinding attachment available for threading shouldered or headed workpieces which cannot be cut or rolled due to material hardness.



## Rolling THREADS

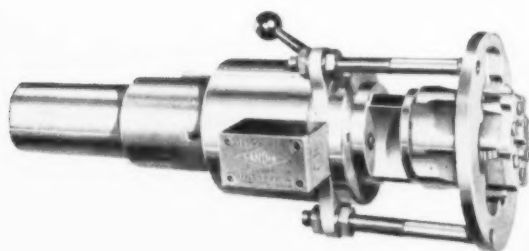
More than 350 sizes and styles of Machines and Tools are manufactured by LANDIS for producing all types of internal and external, straight and tapered threads by one of these three basic threading methods.

This extensive line of Threading Equipment is the result of more than 50 years of research and development—exclusively in the field of Thread Generation. Our most recent additions include the revolutionary LANHYROL Thread Rolling Machine, the new Model C LANDMACO Bolt Threading Machines, and the #1 Automatic Nipple Threading Machine. We are the largest company in the world today devoted entirely to manufacturing equipment for producing threads—by Cutting, Grinding, Rolling, or Tapping.

The Threading Experience developed through these years is an important LANDIS extra available to all manufacturers. Our Engineering Department will be glad to work with your organization on any problem dealing with method, equipment, or thread design. Send us your specifications—let us recommend the Threading Equipment best suited to your need.

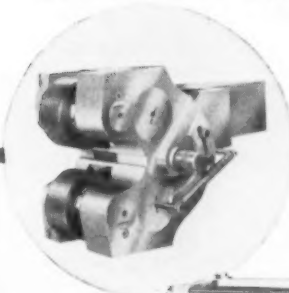
## LANDIS Machine COMPANY

WAYNESBORO • PENNSYLVANIA U. S. A.



### Tapping....

The LL Collapsible Tap for producing internal tapered threads featuring detachable heads for wide range coverage. Other LANDIS Taps include Rotary or Stationary Standard Taps for straight or tapered threads, Solid Adjustable Taps, Valve Taps, and Taps for other special applications.

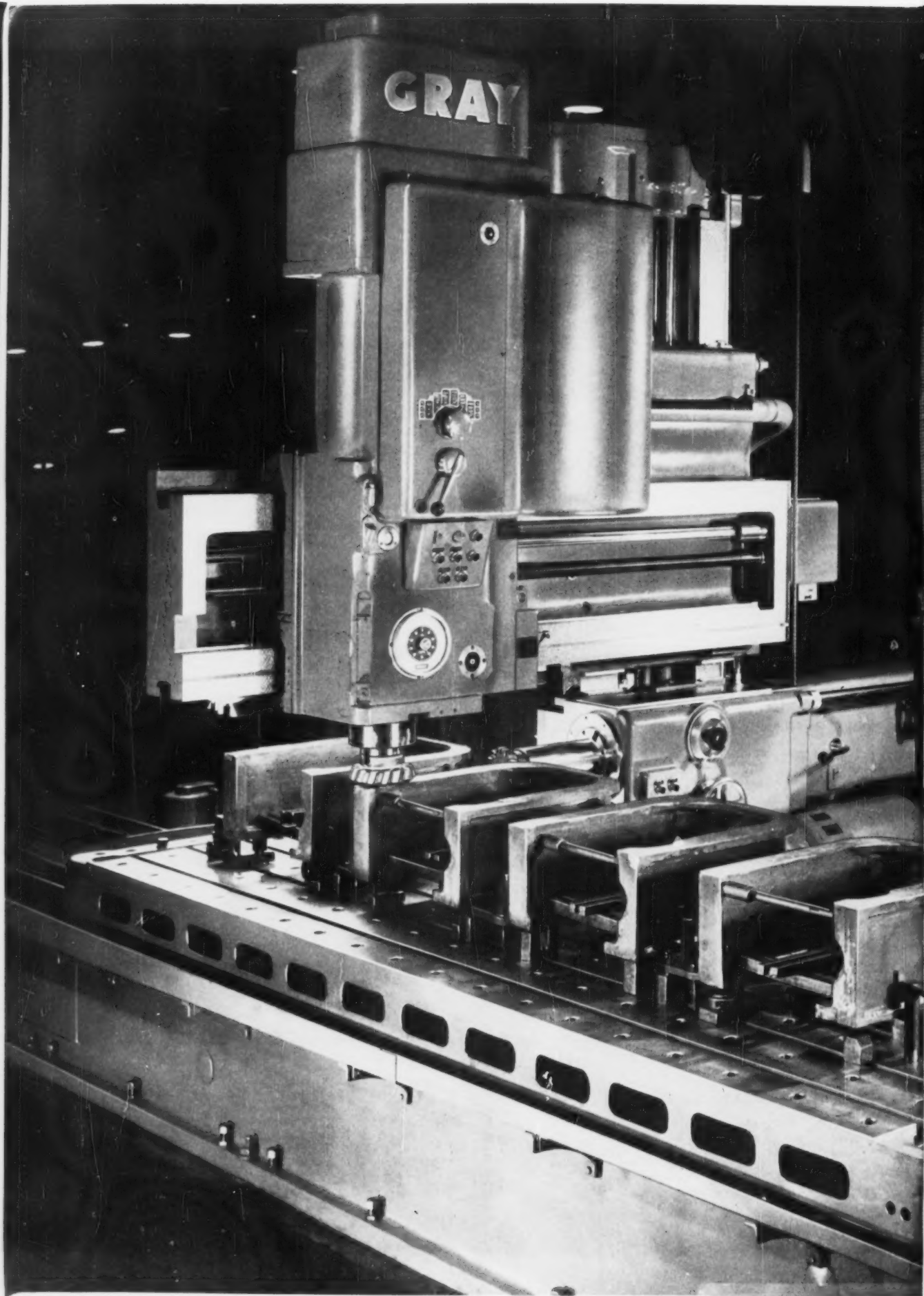


440-2-C



### Rolling....

The new LANHYROL Thread Rolling Machine, revolutionary in its output, accuracy and flexibility. • Above is the #20 LANROLL Attachment—one of five sizes of Thread Rolling Attachments for Automatics and Turret Lathes.



If you're tired of seeing small jobs on your large expensive millers . . .

If you're tired of extra set-ups because your miller has only a single head . . .

If you're tired of whittling away at rugged jobs with low power heads . . .

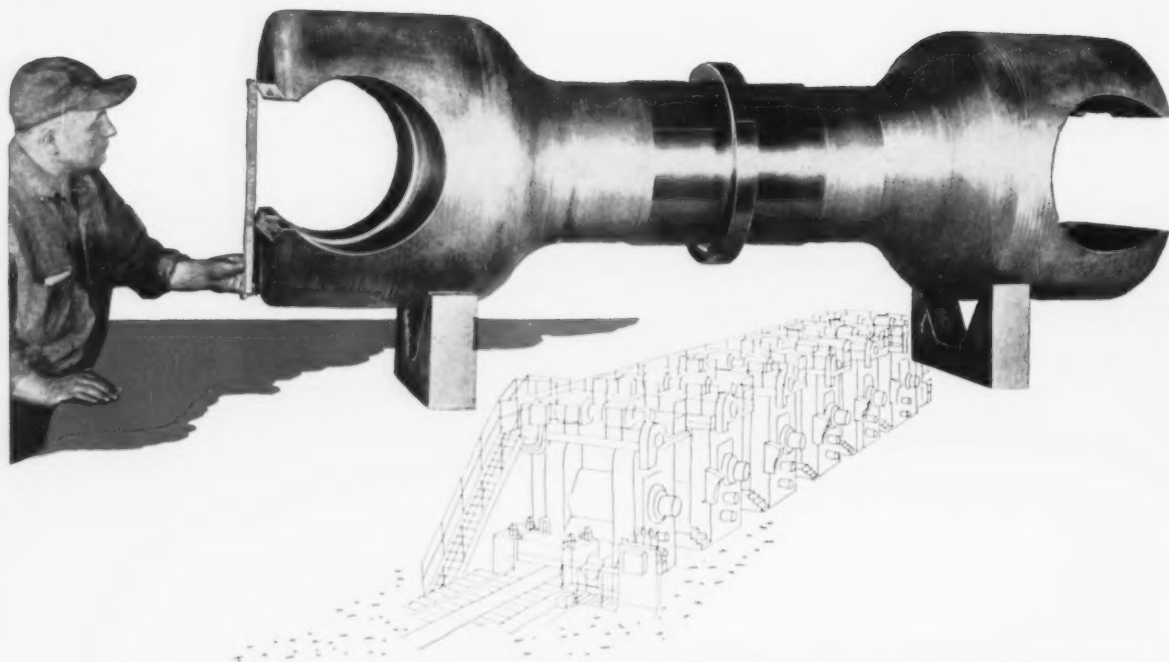
If you're tired of complicated controls that make your operator a mountain goat . . .

*this new*  
**GRAY HANDYMILL**  
*is for you*

Built in a wide range of high horsepower sizes, with great variety in head combinations, simplified pendant control, it fills a long standing need for a powerful, rigid, milling machine for medium sized jobs.

The G. A. GRAY Co., Cincinnati, Ohio





**SAVE MONEY with FINKL FORGINGS**

## *Strip mills do!*

They increase life and therefore reduce "down time" with Finkl finish machined spindles, once again proving that the best costs the least in the long run.

A typical example is this 98" spindle, weighing 5900 pounds, which began as a 13,000 pound forging from a 50,000 pound ingot out of our own melt shop. The utmost consideration for the spindle's end use set up the quality control program before the furnace electrodes started to arc. Then through forging, heat treating, rough and finish machining, and final inspection, each department head and his crew of craftsmen guided the program to its specified completion.

When you are considering cylinders, spindles, driveshafts, or any special purpose forging, whether rough turned or finish machined, call your local Finkl representative. He will be glad to help you plan, or call upon the more than 78 years of Finkl experience to save you money and give you the finest forgings, or die blocks, available.

• DIE BLOCKS •  
ELECTRIC FURNACE STEELS •  
• FORGINGS •  
HOT WORK STEELS •



# **A. Finkl & Sons Co.**

2011 SOUTHPORT AVE • CHICAGO 14, ILLINOIS

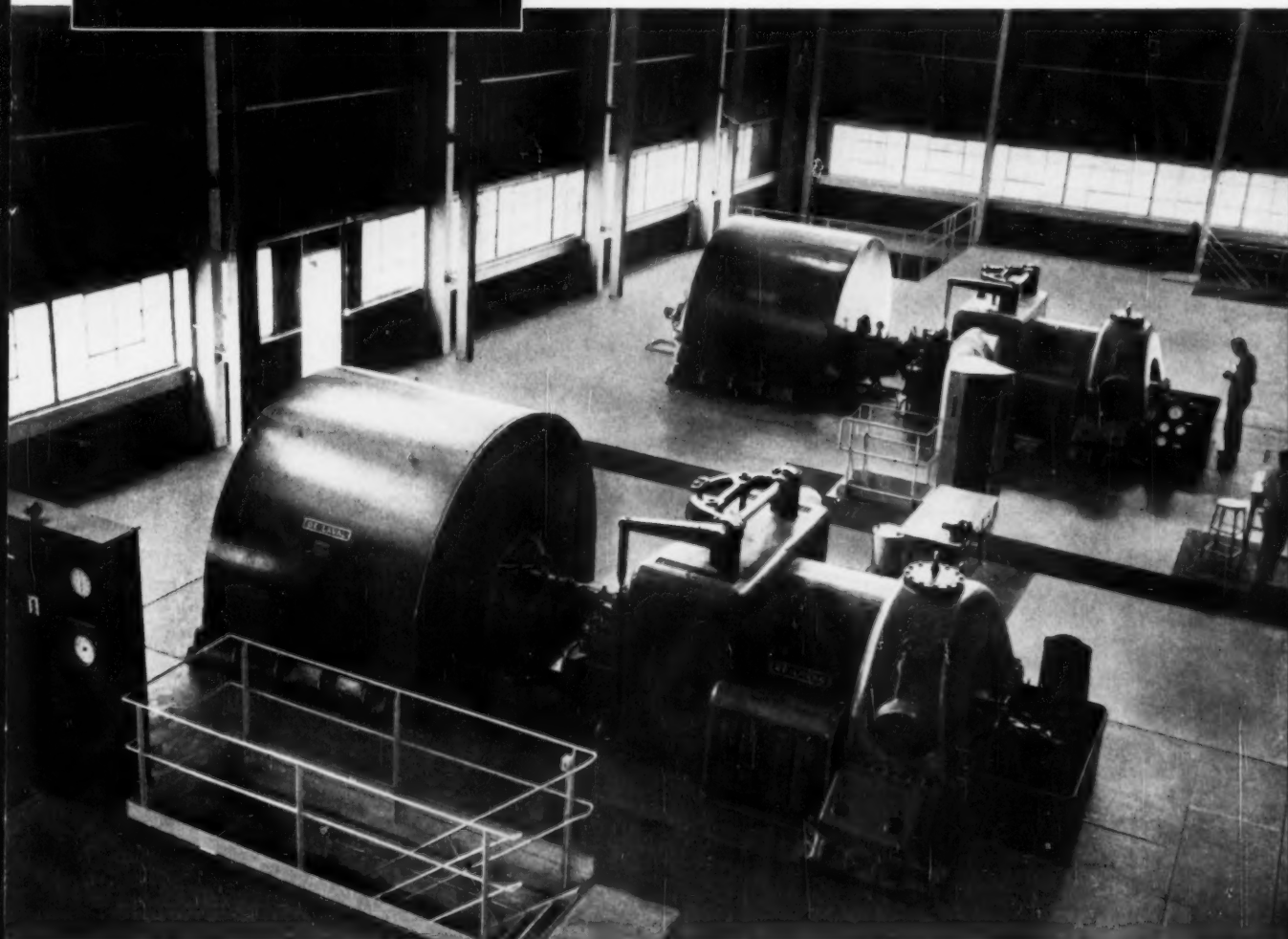
Offices in: DETROIT • CLEVELAND • PITTSBURGH • INDIANAPOLIS • HOUSTON • ALLENTOWN • ST. PAUL  
COLORADO SPRINGS • SAN FRANCISCO • SEATTLE • BIRMINGHAM • KANSAS CITY

Warehouses in: CHICAGO • BOSTON • LOS ANGELES



**DE LAVAL**  
BLAST FURNACE  
BLOWERS

*deliver 110,000 cfm each  
for McLouth Steel*

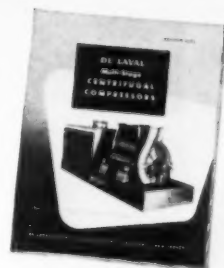


These two De Laval turbine-driven centrifugal blowers do a round-the-clock job in the McLouth Steel plant, Trenton, Michigan. Each has a rated capacity of 110,000 cfm of air; discharge pressure is 30 psig. Each is driven by a 12,400 hp, 2950 rpm De Laval steam turbine operating under steam conditions of 600 psig, 825 F with 2" hg.

De Laval compressors are designed individually for each application to assure maximum efficiency and range of operation. Construction is rugged throughout. Casings and perfectly

balanced rotors are built to take punishment. All parts are precision-made to limit gages. Materials are selected which will best meet the particular conditions of corrosion, pressure and temperature.

De Laval centrifugal blowers are built in single and multi-stage types to supply air in volumes up to 150,000 cfm for all classes of service in steel, gas and coke plants. The wealth of application experience acquired by De Laval over the years assures a correct and economical solution to your blower problem.



*Send for  
Bulletin 0504*



**DE LAVAL** Centrifugal Blowers

DE LAVAL STEAM TURBINE COMPANY

899 Nottingham Way, Trenton 2, New Jersey



Entering weight and dimensional data on control record at the press which forms refractory brick under high pressure. Representative control charts are shown above.



## HARBISON-WALKER REFRACTORIES COMPANY AND SUBSIDIARIES

World's Most Complete Refractories Service

General Offices: PITTSBURGH 22, PENNSYLVANIA

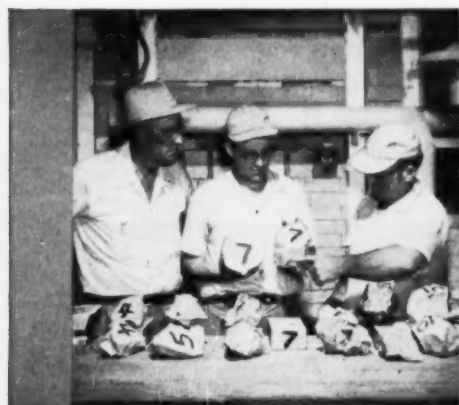
# QUALITY CONTROL—thorough and continuous— assures predictable and uniform *refractories performance* from Harbison-Walker products

Through Statistical Quality Control, Harbison-Walker maintains within closest commercial limits, the highest standards of all characteristics upon which depend the best and most uniform refractory service. Comprehensive control procedure extends from the raw materials through every manufacturing detail with the aid of instrumentation and precise laboratory testing. By this highly developed technique, uniformity of product is achieved which assures predictable and consistently uniform refractories performance. It is possible to estimate service life more accurately and plan furnace campaigns with confidence. With this established uniformity of quality, operating interruptions are fewer and maintenance costs are considerably reduced.

"Lump samples" of clay received from the mine are examined after test-firing.

Determining refractoriness by the "Pyrometric Cone Equivalent" method.

Screen analysis of Brick Mix is an important control operation.



## SEND FOR THIS BROCHURE

The program by which Harbison-Walker controls the properties and quality of the various refractories is described in detail in the new brochure *Better Refractories Through Quality Control*. It shows how uniformity is achieved and maintained in the refractories made from natural minerals from mines and quarries. A copy of this brochure will be gladly sent to you on request.



HARBISON-WALKER REFRACTORIES COMPANY  
Pittsburgh 22, Pennsylvania

Please send me a free copy of your brochure,  
"Better Refractories Through Quality Control."

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_



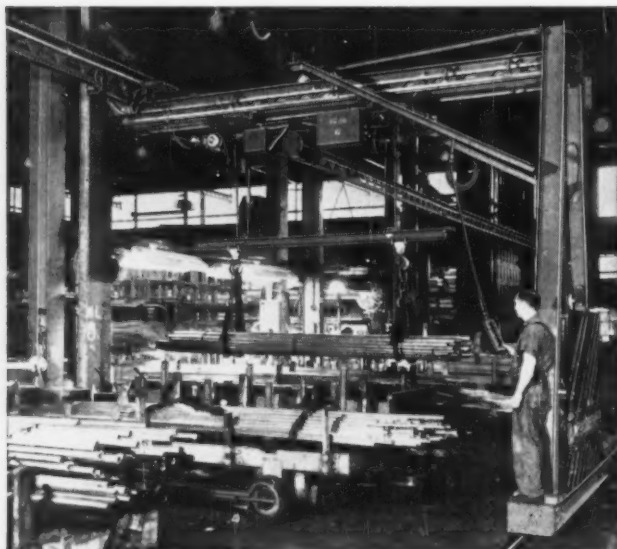
FOUR INTERLOCKED CRANES handle 100-foot long trusses in structural plant. Cranes are 5 tons capacity, 3-runway, 36 and 40 feet long. They operate individually or together as

units. Trusses are removed from jig and advanced to next location within a few minutes by two men operating crane control buttons.

# TRAMRAIL IDEAS THAT



TRACK AND CRANE SYSTEM speeds automobile body fabrication. Tramrail cranes support spot-welding equipment and move assembled bodies between departments. Up to 105 bodies are produced per 8-hour day in this particular work area.

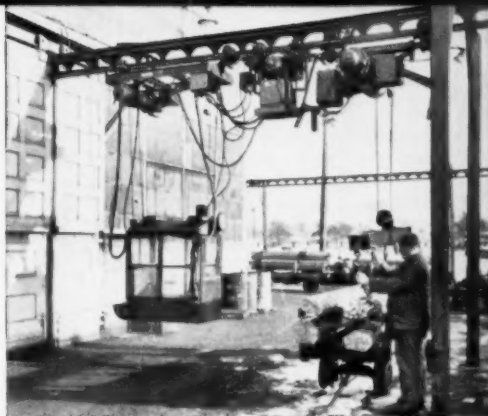


MOTORIZED GANTRY CRANE with spreader beam provides efficient handling in local area for bundles of tubing. Gantries can be hand-propelled, or partly electrified, or completely motorized like one illustrated.





**EFFICIENT CRANE COVERAGE** reduces time loss of skilled workers and expensive machine tools. Hand-propelled Tramrail cranes with electric hoists are an important factor in maintaining a profitable operation in this type of shop.



**RAISE-LOWER CAB CARRIER** permits operator leaving cab at any point to attach hooks to materials to be transported. Floor help is unnecessary and costs are consequently held at a minimum. This unit operates both outside and inside of the building.



**HAND PROPELLED CRANE** with one-ton chain hoist provides overhead conveying and hoisting service at low cost. Operation is smooth and easy, with practically no maintenance.

# CUT COSTS...

**Whatever your handling needs, most likely versatile Cleveland Tramrail can be adapted to solve them.**

In nearly every segment of industry, various forms of Cleveland Tramrail equipment are being used to advantage. In fact, over 40,000 installations are serving 9,000 companies.

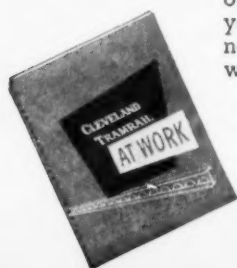
The equipment speeds production, saves floor space, improves safety, reduces floor congestion — and cuts costs tremendously.

Cleveland Tramrail consists of track, switches, carriers, hoists, grabs, etc., which can be combined in a thousand-fold ways to exactly suit your need. Illustrated here are a few random examples of how the equipment is being used. Cleveland Tramrail can be furnished for simple manual operation or with any degree of electrification, including fully automated systems.

A local Cleveland Tramrail sales engineer will be glad to discuss overhead materials handling with you and show you installations at work in nearby plants. Why not get in touch with him? A card or letter to us will do the trick.



**THREE-WAY TRACK SWITCH** enables this tractor-driven 5-ton electric hoist carrier to travel to various parts of a plant. This is another example of the many handling arrangements possible with Cleveland Tramrail.

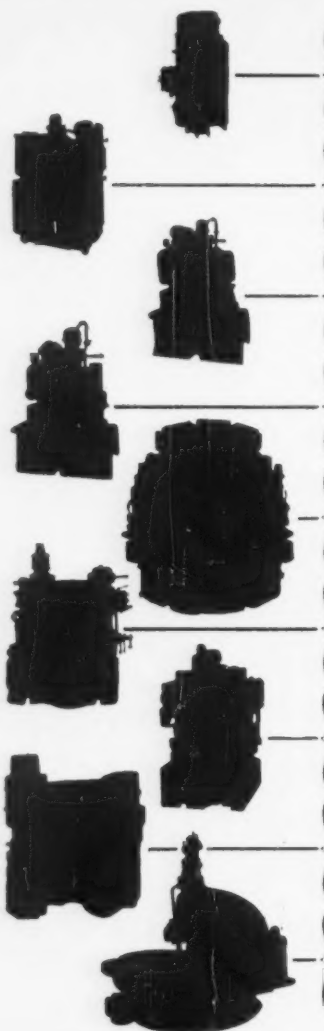


This large book is the greatest in its field. Contains a wealth of valuable information. Covers details of 143 outstanding installations. Has 426 large photos, 59 system layouts, 69 other sketches. Write for your free copy of "Cleveland Tramrail at Work" on your company letterhead. A nearby representative will deliver it without obligation.

**CLEVELAND TRAMRAIL DIVISION**  
**THE CLEVELAND CRANE & ENGINEERING CO.**  
 4804 EAST 290th STREET WICKLIFFE, OHIO

## GEAR SHAPERS

FROM 1/16" TO 120" CAPACITY



SPUR AND HELICAL	EXTERNAL & INTERNAL	MAX. PITCH DIAMETER	MAX. DIAMETRAL PITCH	MAX. FACE WIDTH	MAX. STROKES PER MIN.
<b>3" FINE-PITCH</b>					
both	yes	3 inches	40 steel, 30 brass	3/4" ext.	2000
<b>No. 4GS</b>					
both	yes	6 inches	5/7 spur, 6 hel.	2"	635
<b>7-TYPE*</b>					
both	yes	7" spur, 6 1/2" hel.	6 spur, 6/8 hel.	1 1/2" ext., 1" int.	450
<b>7A-TYPE</b>					
both	yes	7" spur, 7" hel.	5/7 spur, 6 hel.	2" ext., 2" int.	450
<b>No. 10 ROTARY</b>					
both	yes	12 inches	3/4 spur, 5/7 hel.	3" ext., 3" int.	500
<b>6A-TYPE</b>					
both	yes	18 inches	3/4 spur, 5/7 hel.	5" ext., 3" int.	300
<b>No. 12GS</b>					
both	yes	12 inches	3/4 spur, 5/7 hel.	4" ext., 4" int.	550
<b>36-TYPE</b>					
both	yes	36 inches	3 spur, 4/5 hel.	6" ext., 6" int.	300
<b>120-INCH</b>					
both	yes	120 inches	2 spur, 4 hel.	8" ext., 8" int.	148

\*Max. P.D. internal—5 1/2"

**In addition** to the machines listed above, Fellows builds special-purpose equipment for production of gears and related items.

Descriptive literature, as well as specific technical data and price information, will be gladly supplied by your Fellows Representative.

**WRITE, WIRE or PHONE** any Fellows Office!

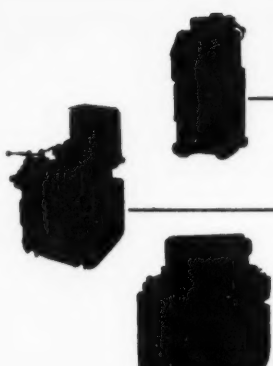
# Fellows

THE FELLOWS GEAR SHAPER COMPANY, 78 River St., Springfield, Vermont  
 Branch Offices: 1048 No. Woodward Ave., Royal Oak, Mich • 5835 West North Ave., Chicago 39, Illinois  
 150 W. Pleasant Ave., Maywood, N. J. • 6214 West Manchester Ave., Los Angeles 45, California

# THE PRECISION LINE

## Gear Production Equipment

### SHAVING MACHINES



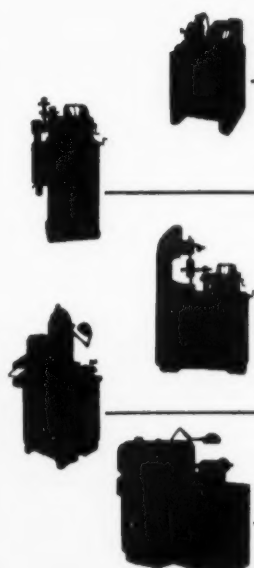
SPUR AND HELICAL	EXTERNAL & INTERNAL	MAX. PITCH DIAMETER	MAX. DIAMETRAL PITCH	MAX. FACE WIDTH	MAX. SPREAD OF CENTERS
both	ext. only	<b>No. 4 FINE-PITCH</b>		1 inch	12 inches
		4 inches	20		
both	yes	8 inches	4	2 1/2 inches	**
both	int. only	***	6	1 1/2" up to 10p; 1", 12 to 16p	***

Also 12", 18" and 24" machines for externals only.

\*\*Depends upon work-holding fixture

\*\*\*Depends upon design of gear

### INSPECTION INSTRUMENTS



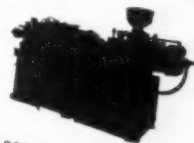
SPUR AND HELICAL	EXTERNAL & INTERNAL	MAX. PITCH DIAMETER
<b>No. 4 FINE-PITCH RED LINER</b>		
both	yes	4 inches
<b>No. 8M RED LINER</b>		
both	yes	***
<b>No. 20M RED LINER</b>		
both	yes	18 inches
<b>No. 12M INVOLUTE MEASURING</b>		
both	yes	12 inches
<b>No. 12H LEAD MEASURING</b>		
both	yes	12 inches

Nos. 24M Involute and 24H Lead Measuring Instruments with capacity of 24 inches

\*\*\*Depends upon design of gear

### Fellows Injection Molding Machines

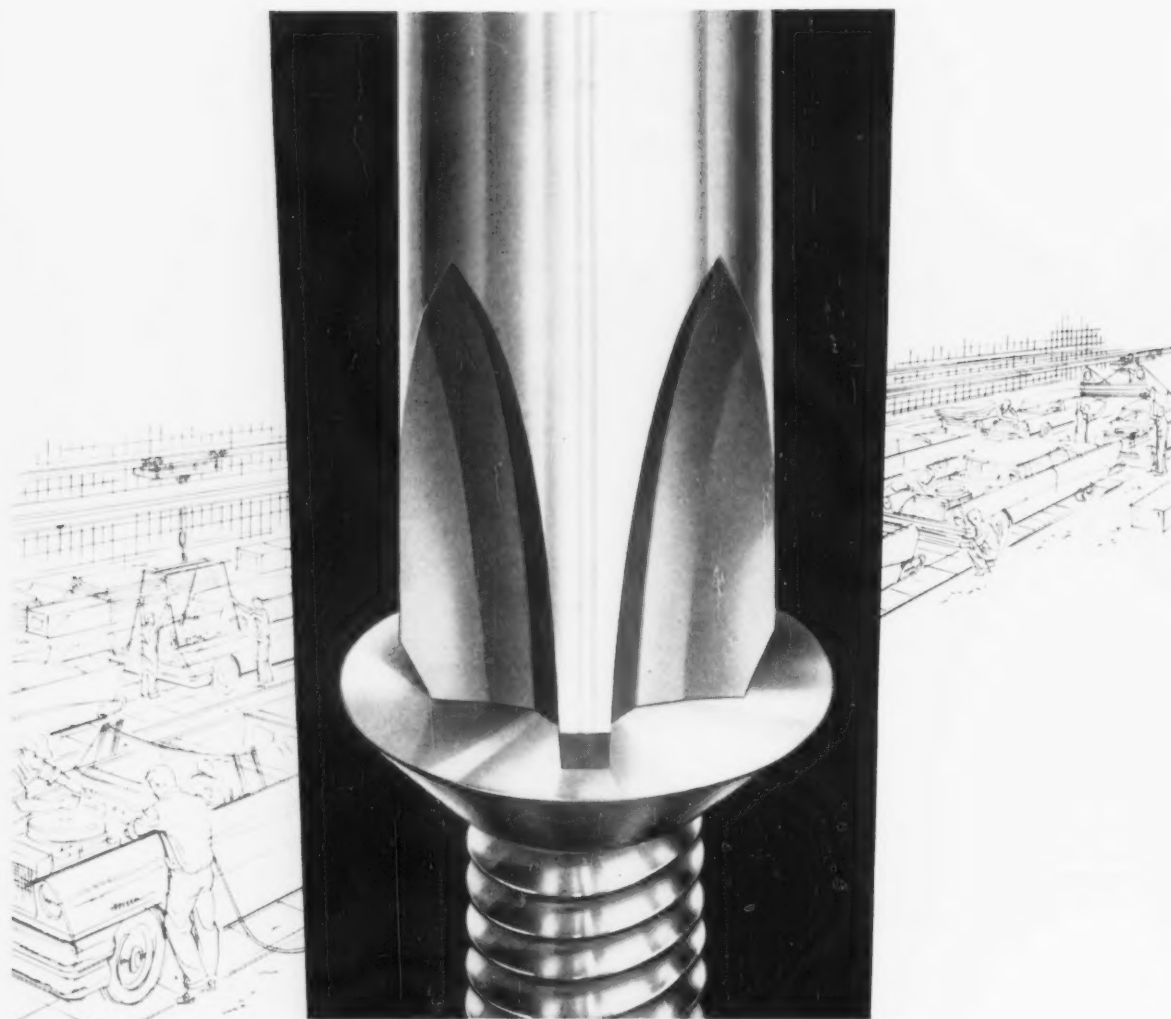
These high-speed, fully automatic injection molding machines provide the ultimate in temperature control, easy clamping, safety and other money-making advantages.



MODEL 6-200 available with "Pre-Back and Pre-Position" device provides up to full 8-ounce shots...dry-run speeds to 650 c.p.h....takes 12" x 24" molds horizontal, 15" x 21" vertical, 8" x 14" thick.



MODEL 1B-3-125 delivers up to 10 shots per minute . . . 45 pounds per hour plasticizing capacity . . . 20,000 p.s.i. injection pressure for pin-point gating.



*They may look the same but...*  
**AMERICAN is the name!**

Fastening costs are usually composed of four factors: price, service, quality and research.

Prices will sometimes vary under local circumstances, but nowhere will you get more of all four than from American.

**American gives you more of all four**

*In service*, where American's clockwork delivery meets any production demand . . . from single-case to precision-scheduling of carload lots.

*In quality*, with an American control technique that includes such protection for you as statistical sampling of

production runs to maintain product uniformity.

*In research*, that developed the original Phillips fastener and showed one manufacturer how to convert a milled-from-the-bar special to a mass-produced, cold headed unit.

You can turn these factors to your own profit by checking American on every fastener requirement.

*Make your own comparisons*: send us your inquiry for price and delivery or your specifications for special fasteners. Write:



AMERICAN SCREW CO. • WILLIMANTIC, CONN.

Norristown, Pa.  
 Chicago, Ill.  
 Detroit, Michigan

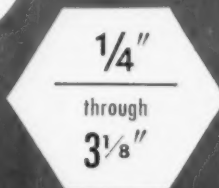
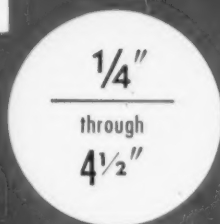
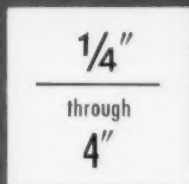
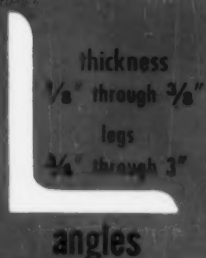


These are the Hot Rolled or Cold Finished

# Quality Stainless Steel Bars

Available From

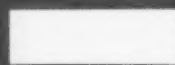
# Rotary



Stainless steel bars within indicated size ranges are being produced for inventory to facilitate prompt deliveries.

Long experience in the production of stainless steels makes Rotary your best source of supply. Close control of quality goes hand in hand with better service for you at Rotary Electric Steel.

bar flats on application



STAINLESS BILLETS FOR FORGING IN COMPLETE SIZE RANGES

## Rotary Electric Steel Co.

P. O. BOX 4606

• DETROIT 34, MICHIGAN



**ALLOY and  
STAINLESS STEELS  
BILLETS • SLABS  
HOT ROLLED and  
COLD FINISHED BARS**

SALES OFFICES—Chicago, Ill. • Cleveland, Ohio • Newark, N.J.

SALES AGENTS—Indianapolis, Ind. • Fayetteville, N.Y.

January 3, 1957

29

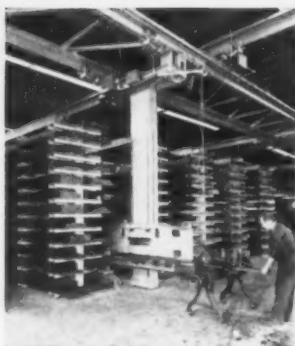
Neat, convenient and efficient steel bar storage stacked mechanically by the American MonoRail Stacker in narrow aisles



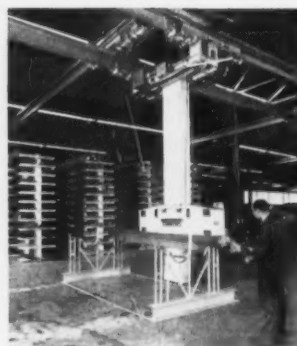
## HOW'S THIS FOR STEEL STORAGE!

American MonoRail engineers, working with Hawkrig Brothers Company, designed this system for storing bars, rods and other long steel shapes.

Note the extremely narrow aisles and maximum height of racks. Bars and rods, 20-22 feet long, are placed in pans 18 feet long. The American MonoRail Stacker transfers these pans to either side of an aisle for storage.



MonoRail Stacker forks support bar in saw. Saw with extension rolls to any convenient spot in the warehouse.



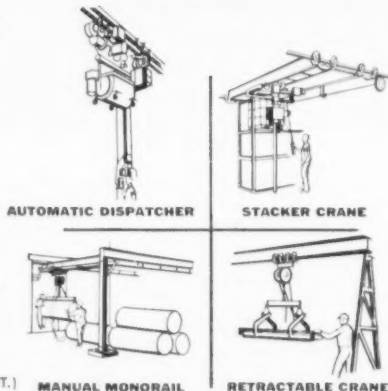
American MonoRail Stacker lowers a banded bundle of bars over prongs which ingeniously splits bands, lets bars roll into trough for pick-up in a tray.

Photos: Courtesy of Hawkrig Brothers Company, Waterbury, Conn.

Member of Materials Handling Institute - MonoRail Association



AMERICAN  
**MonoRail**  
COMPANY



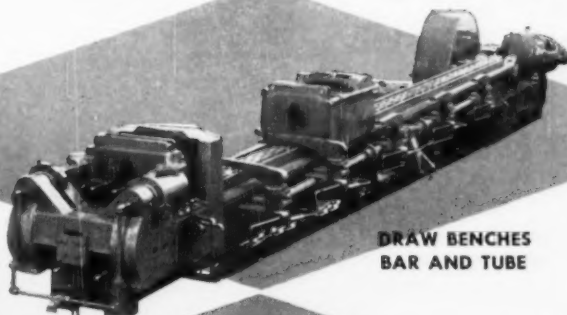
13103 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

MANUAL MONORAIL

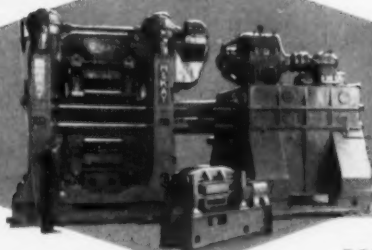
RETRACTABLE CRANE



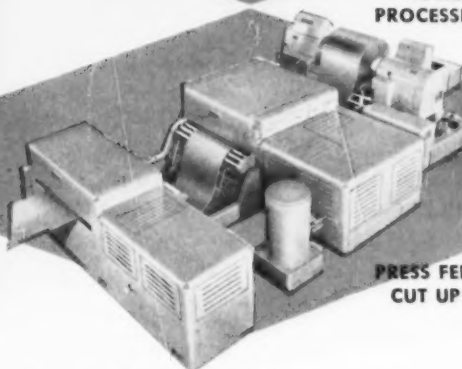
**TUBE MILLS AND  
FORMING MACHINES**



**DRAW BENCHES  
BAR AND TUBE**



**ROLLER LEVELERS,  
PROCESSING MACHINES**



**PRESS FEED AND  
CUT UP LINES**

# ***Metal working Automation in action...***

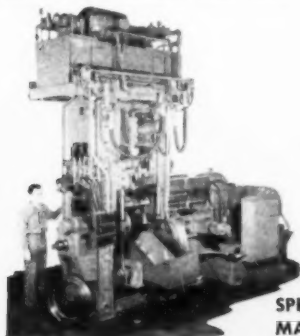
If you're in the metal working business, you should be acquainted with McKay *automated* lines available for many metal working operations.

McKay pioneered and has played a leading

role in the development of such equipment as that pictured on this page.

Basic McKay designs can be modified, or special machines developed to meet specific requirements.

**THE MCKAY MACHINE CO., YOUNGSTOWN, OHIO**



**SPECIAL  
MACHINERY**

# **McK**

ONE OF A SERIES . . .

## What makes a cylindrical roller bearing good?

### The RIGHT ROLLER DESIGN and QUALITY CONTROL

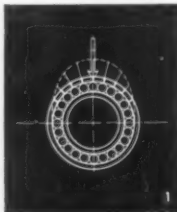
The design and quality of the rollers play a large part in the performance of a cylindrical roller bearing. At right are some of the vital factors which must be considered.

All these factors are scrupulously controlled by the most modern precision equipment to insure maximum performance and life for every HYATT Roller Bearing. You'll find more details in HYATT General Catalog No. 150, or your nearby HYATT Sales Engineer will gladly help you choose the type best suited to your requirements. Remember, HYATT is America's first and foremost maker of cylindrical roller bearings. Hyatt Bearings Division of General Motors, Harrison, New Jersey.

  
**HYATT**  
**HY-ROLL BEARINGS**  
**FOR MODERN INDUSTRY**

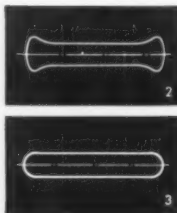
#### 1. DISTRIBUTION OF LOAD WITHIN THE BEARING

Rollers are subjected to load only while in the "load zone," with maximum load while on the line of action of the bearing load, as shown in diagram 1. The theoretically perfect "load zone" extends from  $-90^\circ$  to  $+90^\circ$  from the line of action, but this is neither practical nor necessarily desirable. Under normal loadings, the actual "load zone" may range from  $90^\circ$  to  $120^\circ$ , depending on load and mounted internal clearance. This distributes the load so the load on the heaviest-loaded roller is approximately  $5/N$  times the bearing load, where  $N$  is number of rollers.



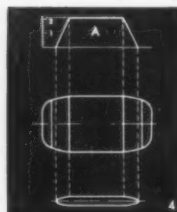
#### 2. DISTRIBUTION OF LOAD WITH- IN ROLLER'S AREA OF CONTACT

A cylinder deflects locally in the region of engagement when loaded between flat plates. The plate also deflects, so the original line of engagement is broadened into a "dog-boned" area under load, as shown in diagram 2. Moreover, deflected cylinders must gather in metal at their ends in two planes, and this end-loading effect can seriously reduce the life of a cylindrical roller bearing. All HYATT rollers have generous corner radii or blended chamfers to reduce end effect; and all HYATT Hy-Load rollers also have crowning to allow the contact area to "fade out" evenly (diagram 3).



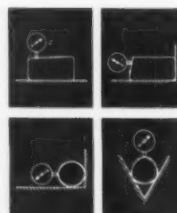
#### 3. DISTRIBUTION OF LOAD ACROSS ROLLER

The unit load on any roller is uniformly distributed axially except at the crowned ends where it drops off to zero as shown in diagram 4. The summation of unit loads represented by area A is the total roller load. This same load under misalignment results in an area equal to area A; but maximum unit load is considerably greater and the bearing will have a shorter life than a properly aligned one. When the same total load is applied to an uncrowned roller, an even higher unit load results. This demonstrates the value of crowning when misalignment occurs.



#### 4. EFFECT OF ROLLER QUALITY ON BEARING PERFORMANCE

Lack of roller quality control has a very adverse effect on performance:



1. A roller with excessive taper tends to uneven load distribution and abnormal temperature rise. 2. A roller with excessive end square tends to noisy bearing performance. 3. A roller with excessive two-point out-of-round tends to poor segregation and poor bearing life. 4. A roller with excessive three-point out-of-round tends to noisy bearing operation. 5. A roller with poor finish tends to wear on all operating surfaces and noisy operation. 6. A bearing with excessive roller-to-roller diameter variation tends to poor bearing life. 7. A bearing with excessive roller-to-roller length variation tends to poor thrust capacity, abnormal temperature rise,

bearing with excessive roller-to-roller length variation tends to poor thrust capacity, abnormal temperature rise,



# PERFORATED METALS *for Every Purpose*

**INDUSTRIAL AND ORNAMENTAL**



Steel, Brass, Copper, Monel,  
Bronze, Aluminum, Zinc,  
Lead, Stainless Steel and all  
metals or materials punched  
as required and for all kinds  
of screens.

We can guarantee perfectly  
flat sheets free from buckles  
and camber.

*Write for Catalog*



**CHARLES MUNDT & SONS**  
**59 FAIRMOUNT AVE.**  
**JERSEY CITY, N.J.**

**THE  
BULLARD  
COMPANY**

*Announces the acquisition of the*

**HYDRA-FEED**  
*Lathe*

(formerly manufactured by Hydra-Feed Machine Tool Corp.)



The name "Bullard" on machine tools dates back  
over three quarters of a century . . . to 1880.

Bullard tradition stands for advanced engineering,  
quality of craftsmanship and reliable performance.

These same attributes will continue to be our constant goal in the future.

**THE BULLARD COMPANY**  
BRIDGEPORT 9, CONNECTICUT

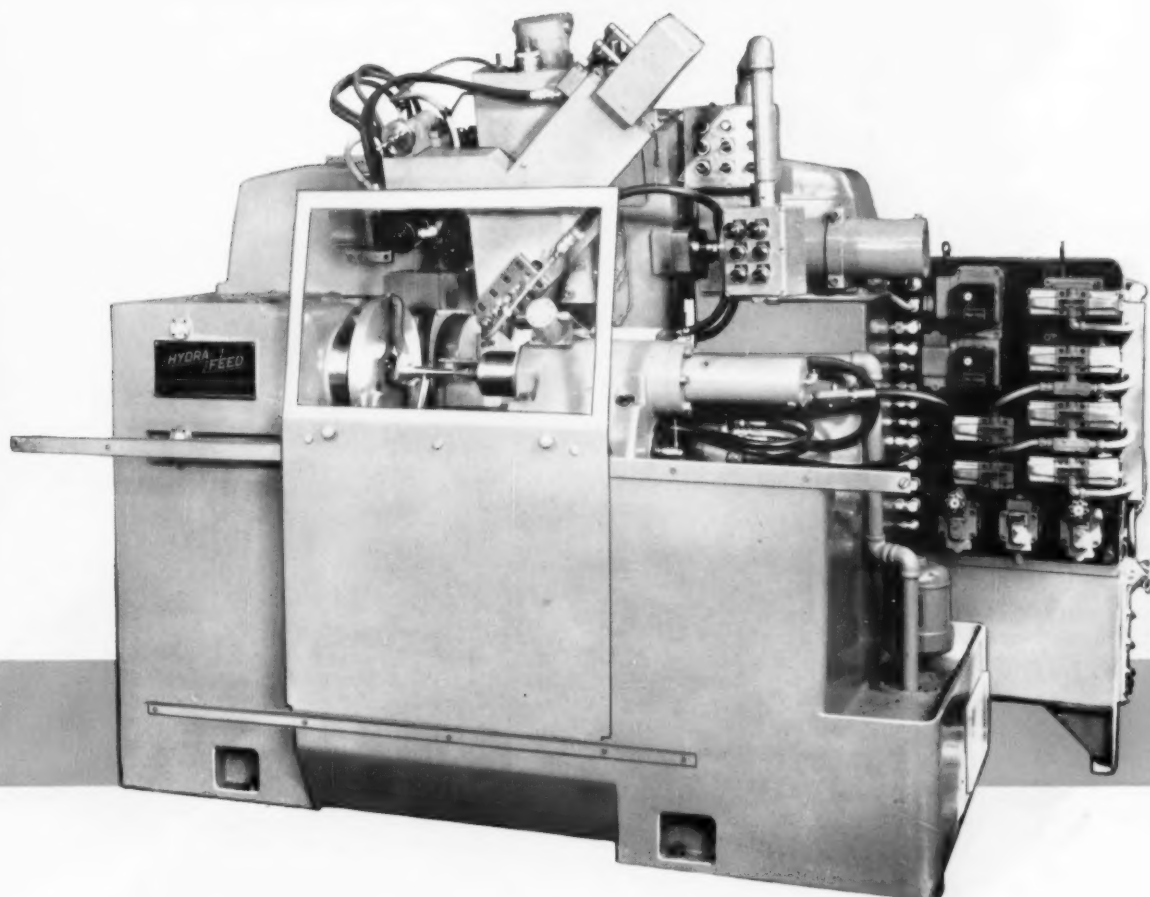
## OUTSTANDING FEATURES INCLUDE:

Unobstructed front view design allows faster loading and unloading . . . easier set-up . . . with less operator fatigue.

When used as a tracer lathe templates are above work piece where dirt, chips and cutting oils cannot interfere with work accuracy.

Oversized chip chute with pan below the entire work area . . . readily accessible from end, rear or bottom of machine.

Massive strength and rigidity with extra power to take full advantage of maximum feeds and speeds obtainable with multiple carbide tooling.



*Fill Out The  
Coupon Now*

**THE BULLARD COMPANY**  
286 CANFIELD AVENUE, BRIDGEPORT 9, CONNECTICUT  
Please send me a copy of the BULLARD HYDRA-FEED LATHE CATALOG

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_ POSITION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



To Keep Your Product Quality High, Specify

## YOUNGSTOWN SHEETS AND STRIP

This modern production line is busy turning out high quality steel stampings for electric range tops. To help maintain their excellent reputation for quality work, this progressive concern relies on Youngstown Sheets and Strip—the best drawing and stamping steel obtainable anywhere.

Youngstown's half-century of steelmaking know-how guarantees you a blend of the right combination of tensile strength, surface finish and ductility to provide top-production runs of even the most difficult-to-form work.

Satisfied users tell us they get increased production, fewer rejects, faster and more accurate forming, together with lower fabrication and die costs. Why not get the same advantages by making Youngstown Sheets and Strip your specification? They are quality-controlled through every steelworking, rolling and annealing operations to meet your most exacting requirements.

Contact our nearest District Office, today, for additional information or metallurgical assistance—or write directly to our Home Office.



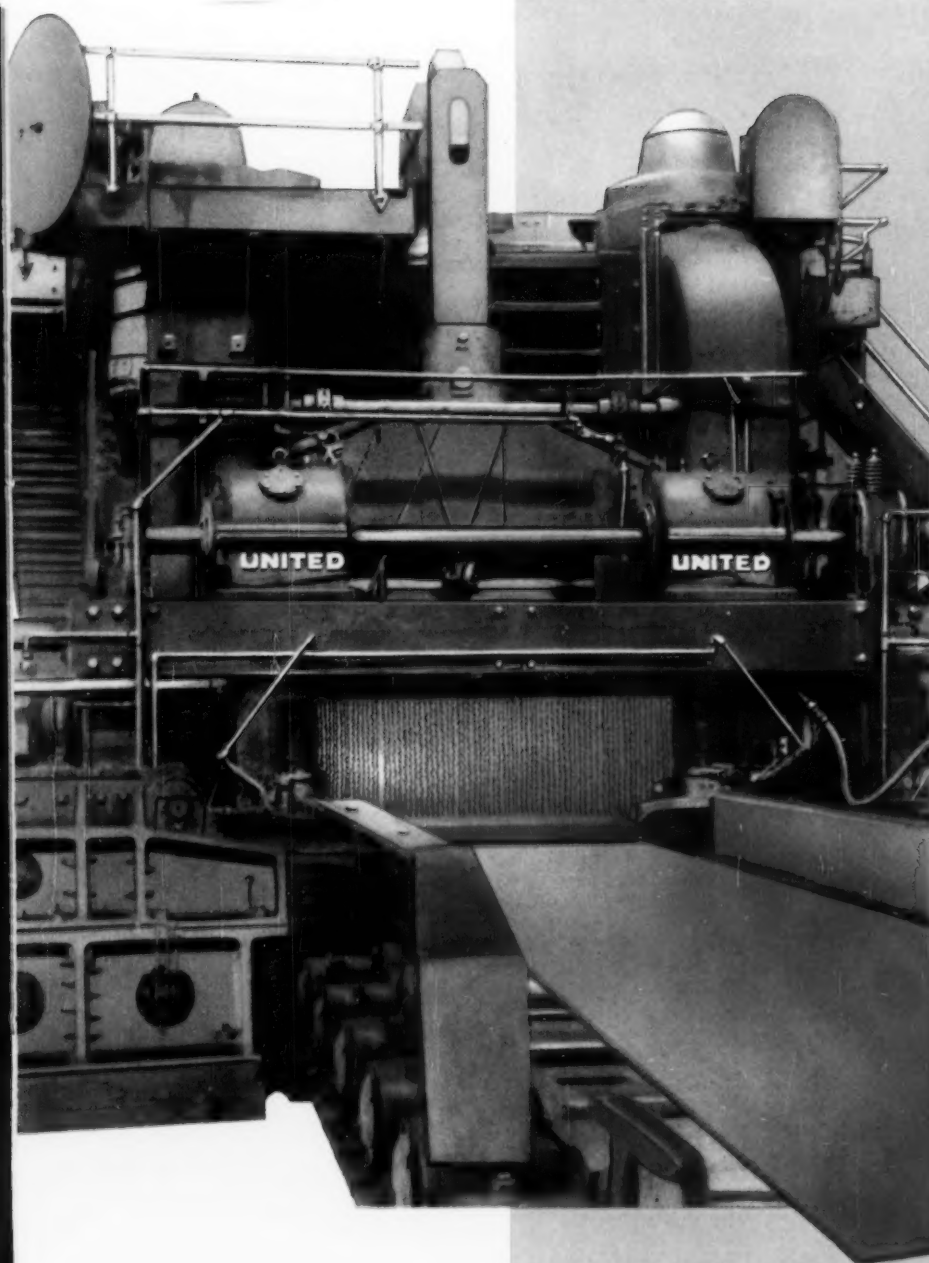
**COLD ROLLED  
SHEETS  
AND STRIP**

**THE  
Youngstown  
SHEET AND TUBE COMPANY**

General Offices - Youngstown 1, Ohio  
District Sales Offices in Principal Cities

*Producers of Quality Carbon and Alloy Steels for Over Half-a-Century*





# UNITED<sup>®</sup>

## 120 inch Plate Mill



# UNITED

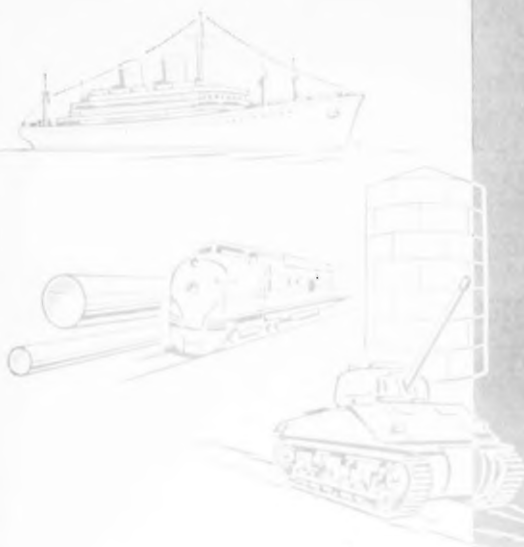
**ENGINEERING AND FOUNDRY COMPANY**  
**PITTSBURGH, PENNSYLVANIA**

Plants at PITTSBURGH • VANDERGRIFT • YOUNGSTOWN • CANTON  
WILMINGTON (LOBDELL UNITED DIVISION)

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO  
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

**UNITED can serve you no matter where in the world you are.**





**When this man  
Lowers your cost\*...  
it's NO ACCIDENT...he's a Safety Director**

**\*He Prevents Accidents Like This:**

At a metal working plant, eye injuries represented 27% of the total first aid cases . . . 14% of all lost-time accidents and 29% of the company's compensation costs over a 6-year period. Due to the effort of the Safety Director the plant installed a 100% eye protection program which has since cut first aid eye cases to 14.9% of all first aid cases . . . lost-time eye cases to 2.8% of all lost-time cases . . . and eye injury compensation to 5% of all compensation costs. What's more . . . the plant esti-

mates that at least three eyes were saved and more than \$15,000 in compensation from "injuries that were prevented"!

A safety director administering a sound eye protection program is an unbeatable combination for reducing costs. The program alone can pay for itself in less than six months — and the safety director's services can be priceless when you figure what he can save on ALL types of industrial injuries. Ask an AO® Safety Representative to show you how little an eye protection program costs.



One of AO's new F5100 Series metal Safety glasses with "Ultrascope Vision". Write for illustrated brochure.



SOUTHBRIDGE, MASSACHUSETTS  
BRANCHES IN PRINCIPAL CITIES

# Use **ACTIVOL** Additive

REG. U.S. PAT. OFF.

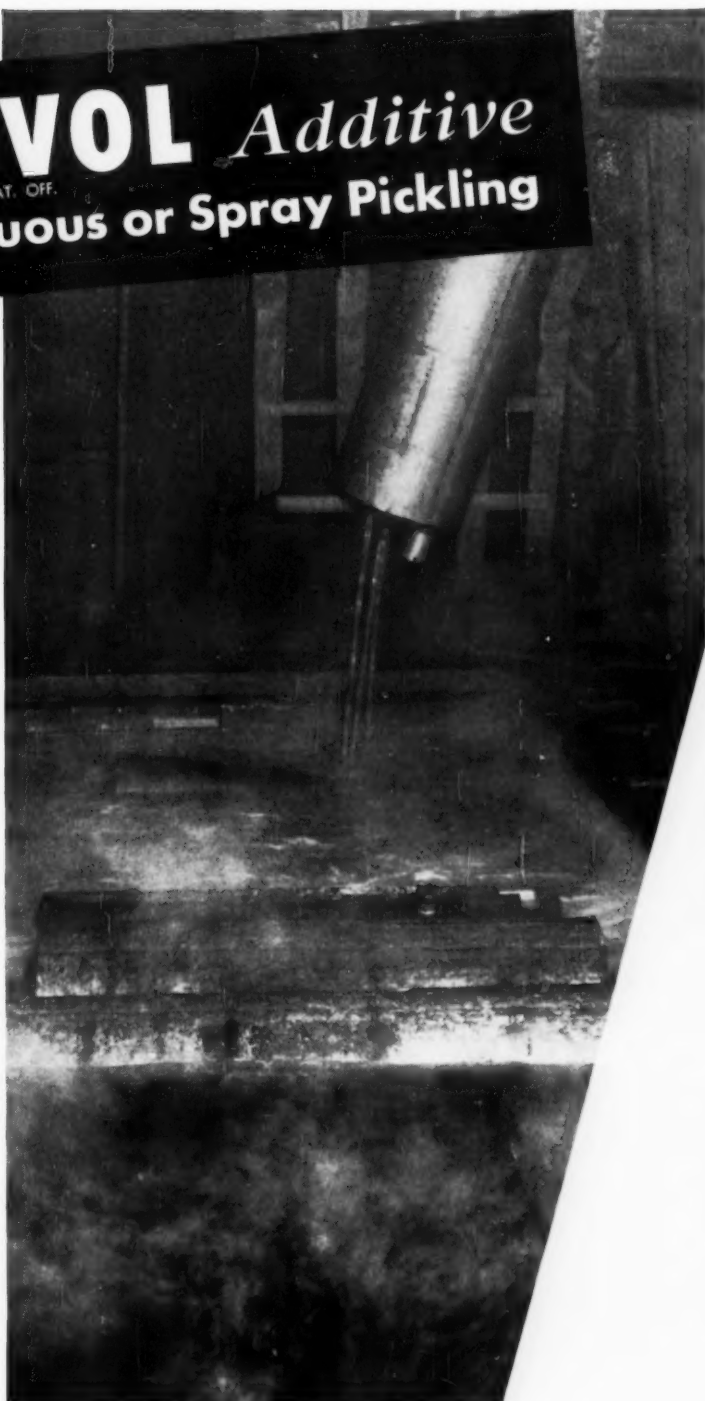
## in Batch, Continuous or Spray Pickling

- Saves Acid
- Saves Steel
- Lowers Pickling Cost
- Reduces Fumes
- Provides Cleaner Metal

Put **ACTIVOL** in your pickling process and get the eight important benefits only this original chemical provides:

1. accelerates—delays or maintains at present rate pickling of metal in acid baths
2. controls scale removal with minimum action by the acid on base metal
3. reduces hydrogen embrittlement
4. removes oil and mill grease
5. speeds cleaning and pickling cycles
6. reduces amount of acid required
7. eliminates fume formation
8. costs less per ton of metal processed

**ACTIVOL** is available in numerous liquid or powdered grades offering various degrees of detergency, wetting out properties, foaming and non-foaming characteristics. All grades mix, in a clear solution, with all mineral or organic acids. They are not black coal tar derivatives.



Write, wire or call and get full details on popular **ACTIVOL** additives.



manufacturers of **STEELGARD**,  
**IMMUNOL**, **HAMIKLEER**

## **HARRY MILLER CORP.**

*Original Products and Processes Since 1936*

**4th and BRISTOL STS., PHILA. 40, PA.**  
**DAvenport 4-4000**

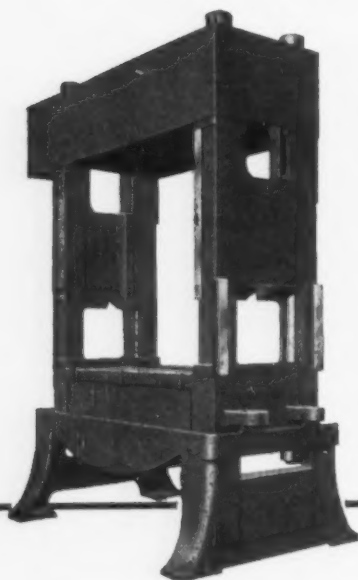
*Service Representatives in Principal Cities*

if you manufacture parts  
like these...



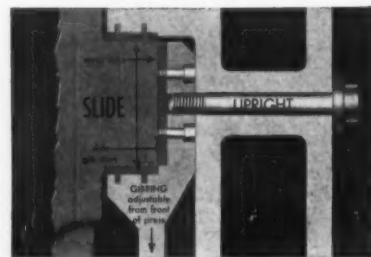
**A BLISS HIGH PRODUCTION PRESS**  
may triple your output... or more

**EXCLUSIVE DESIGN FEATURES...** assure accuracy  
at high speed



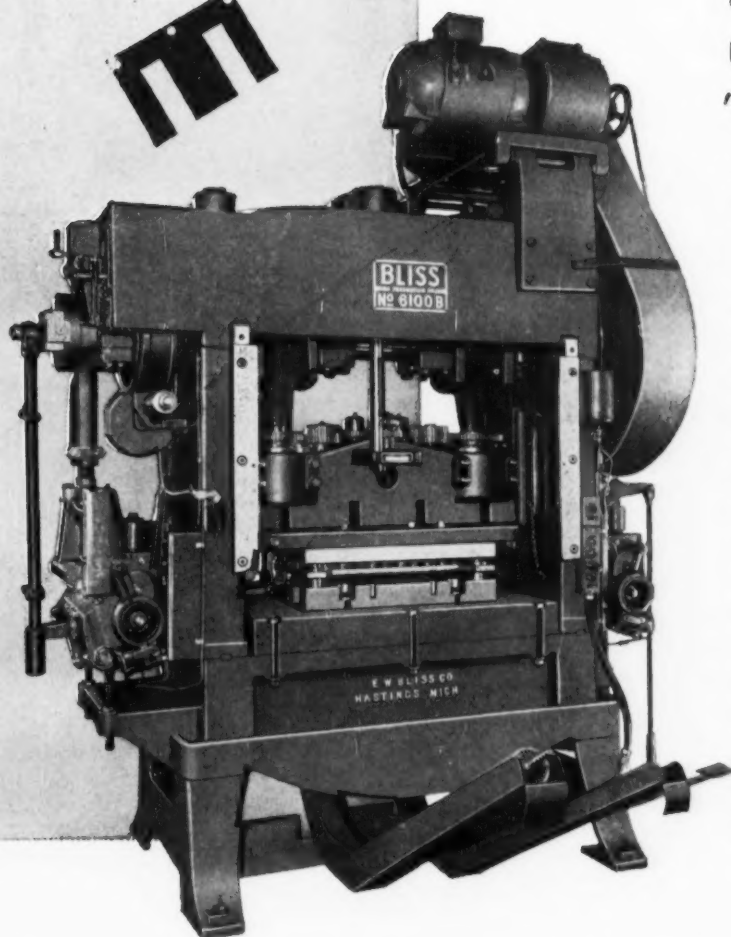
**RUGGED FRAME:** The dense, cast Meehanite frame absorbs sound, eliminates ringing "ping" at high speeds. Heavy four-piece frame members are keyed and joined by steel tie rods which are "pre-shrunk" to a tension greatly exceeding press capacity. Extra heavy sectioned bed and crown holds deflection to a maximum of 0.001" per foot at press capacity under normal loading conditions. Heavy reinforced crown gives extra support to the shaft. The design of the frame leaves plenty of room for die set up—provides chute space under the press.

**VARIABLE SPEED DRIVES** are standard on H-P presses so that each job can be run at its most efficient speed.



**SQUARE GIBS** provide precision fit—no more than a 0.0015" feeler goes between gib and slide, although slide moves freely. Location of gibs close to centerline resists tendency of slide to tilt under off-center loads—slide is held parallel to bed within 0.0005" per foot on all dimensions.





## Long runs not essential, users report

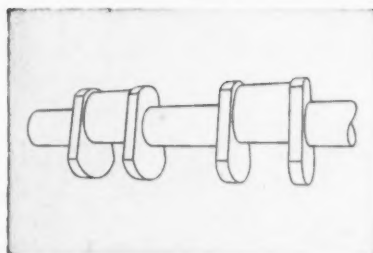
*"we set up in 15 minutes, run 3000 parts in another 10..." is typical experience*

Consider this: a Bliss H-P Press is usually able to replace from 3 to 12 older and slower presses. And the savings in space, tooling and handling costs alone are often enough to write off the cost of a H-P press.

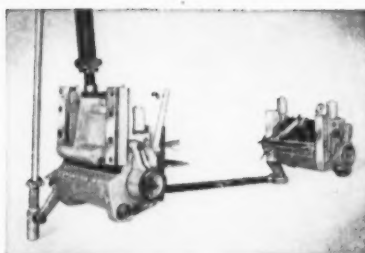
*But the really important saving is in the cost of the parts themselves, because you get so many more so much faster and dies last so much longer.*

Fast set-up makes that true for both long and short run work. IBM, for example, needs only *eleven* H-P presses to turn out multi-thousand quantities of more than 1500 different parts every three months. Their average set-up time: 48 minutes.

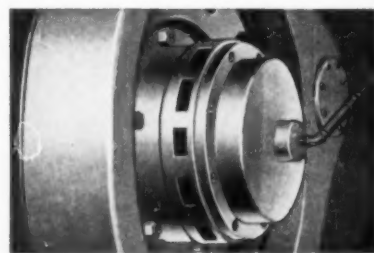
H-P presses are available from 12 to 300 tons, non geared or single geared. Special designs, special feeds extend their use to practically all stamping requirements. We'll be glad to send you complete information by return mail.



**COUNTERBALANCED** to eliminate vibration. Slide and tools are counterbalanced by means of air cylinder in crown. Where top speed of press requires, the crankshaft is dynamically balanced and the throwblock for the feed is balanced by a compensating weight on the feed adjusting screw.



**BLISS FEEDS:** Bliss makes its own single roll, double roll and special feeds to assure accurate feeding at high speeds. Typical of Bliss design is its roll feed clutch—with *eight* or more rollers bearing on *Stellite* inserts in the hub, it gives greater accuracy longer.



**AIR FRICTION BRAKE AND CLUTCH:** Special design gives die setter and operator complete and accurate control of the press. Air pressure can be set so clutch will slip under severe overloads. In addition, this cool-running clutch automatically adjusts itself for wear.

# BLISS

SINCE 1857

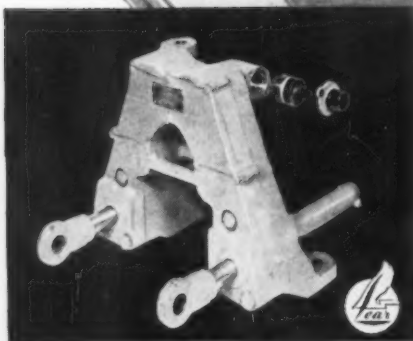
*is more than a name...it's a guarantee*

**E. W. BLISS COMPANY, Canton, Ohio**  
**PRESSES, ROLLING MILLS, SPECIAL MACHINERY**

U. S. Plants in Canton, Cleveland, Salem and Toledo, Ohio; Detroit and Hastings, Michigan; San Jose, California; Midland and Pittsburgh, Pennsylvania. Branch Offices in Burbank, Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Pittsburgh, Rochester, San Jose, Toledo, Washington, D. C., and Toronto, Canada; E. W. Bliss (England) Ltd., Derby; E. W. Bliss Co. (Paris), France. Other representatives throughout the world.

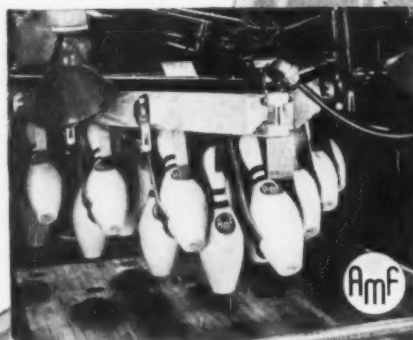
## up in the clouds..

When a Navy Training Plane points its nose skyward in defiance of gravity, everything from tip to tail must be a model of precision and endurance. Federal Ball Bearings are here, too, in the flexible drive assembly of this Lear actuating screwjack, which helps raise and lower the pilot's seat.



## or down the lane!

Bowlers call it magic, the way the AMF Automatic Pinspottter sets 'em up—even replaces "off-spot" pins in their exact location after every roll. Federal Ball Bearings do their part in the gear boxes of these mechanical marvels.



# so much of industry *turns on* FEDERAL ball bearings



## Federal

**Ball Bearings**

*One of America's Largest  
Ball Bearing Manufacturers*

Pilot's comfort or bowler's score. Production manager's quota or housewife's cake. All are important to those who design and build so many of the thousands of tools, machines and household appliances—with Federal Ball Bearings. 12,000 sizes. Hundreds of types. Produced by this 50-year-old manufacturer of ball bearings, *exclusively*.

When Federal Ball Bearings are part of so many things you use, shouldn't they be part of the things you *make*?

THE FEDERAL BEARINGS CO., INC. • POUGHKEEPSIE, N.Y.

New! Ball bearing and engineering data! 175 pages full in FEDERAL'S CATALOG! To get your copy, just drop us a line.

**You get what you want with**

# DANLY

**PRESSES**

## **PLANT SUPERINTENDENTS**

**get production they can count on**

Danly Presses work full time. You don't have to worry about breakdowns and there's less "waiting" time because dies last longer between grinds. Precise, accurate alignment of Danly Presses makes set-up faster, too. Manpower efficiency goes up because controls are designed for fast, safe operation.

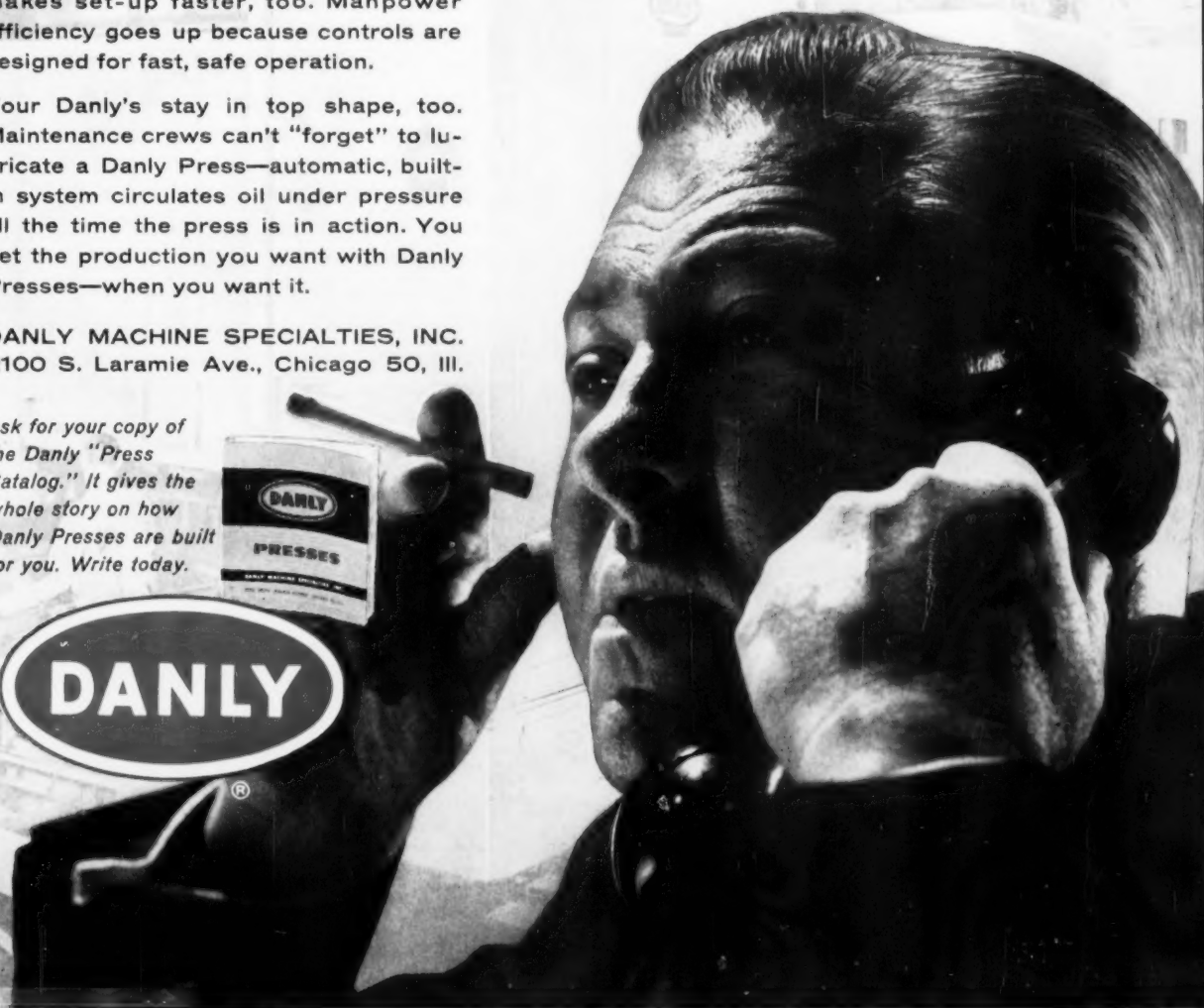
Your Danly's stay in top shape, too. Maintenance crews can't "forget" to lubricate a Danly Press—automatic, built-in system circulates oil under pressure all the time the press is in action. You get the production you want with Danly Presses—when you want it.

**DANLY MACHINE SPECIALTIES, INC.**  
2100 S. Laramie Ave., Chicago 50, Ill.

*Ask for your copy of  
the Danly "Press  
Catalog." It gives the  
whole story on how  
Danly Presses are built  
for you. Write today.*



**DANLY**





**USERS SAY**



**RUBBER PRODUCTS**

### **ALLFLEX HOSE Handles Easier On Every Job!**

Here's an all-purpose hose that's strong, yet light and kinkless . . . a versatile work-saver for handling air, water, oil and gases—even mild chemicals! It's the first hose of its type made for all-purpose use . . . offers a degree of strength *plus* flexibility not possible with ordinary all-purpose constructions. Allflex has no pre-set twist . . . coils and uncoils freely *in any direction* . . . has uniform inside and outside diameters for faster, easier, *safer* coupling.

Exclusive engineered advantages of Allflex add up to easier handling, longer life . . . lower hose costs for a variety of use. It's one of an extensive line of high quality R/M hose for general and special purpose service . . . engineered to give you "More Use per Dollar" on every job!

*Write for Bulletin # 7075*



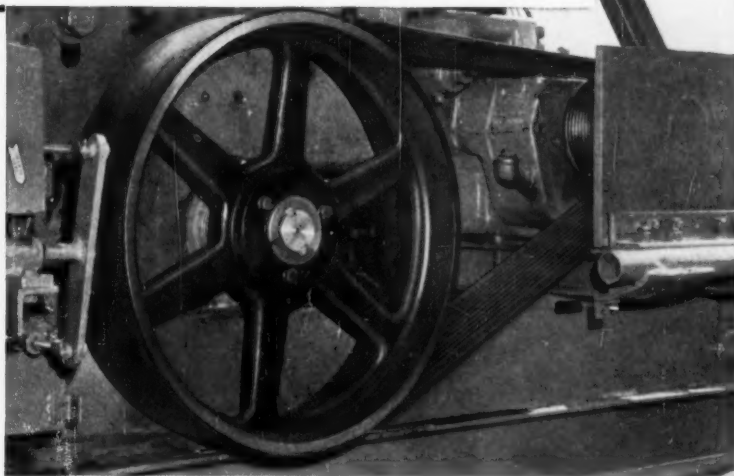
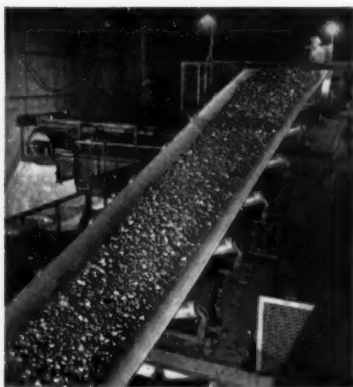
# GIVE YOU "More Use per Dollar"

## R/M CONVEYOR BELTS... You Name the Service

Whatever material or products you are conveying, chances are R/M has the rubber conveyor belt engineered specifically for the job. Ray-Man Conveyor Belt, for example, is designed for heavy loading of bulk materials. Strength Members are cushioned. Double compensation relieves stress on outer plies . . . This assures extra flexibility even where relatively thick, narrow belts are used or where pulleys are small. Use of newest synthetic super-strength fibers means greater service than ever before . . . holds fasteners under the most severe conditions . . . requires no breaker ply. Like all R/M heavy duty conveyor belts, Ray-Man is moisture-resistant . . . mildew-proof . . . protected against wear, tear, cuts and abrasion with R/M's exclusive "XDC" Cover!

An R/M representative helps you select the best construction for "More Use per Dollar" on your job.

Write for Bulletin #6915



## More Power in Less Space... if it's R/M POLY-V® Drive!

This entirely new, patented, power transmission drive features a *single, endless* parallel V-ribbed belt running on sheaves specially designed to mate precisely with the belt ribs. The results? *Uniform* belt pull, *even* distribution of drive load . . . highest horsepower capacity per inch of drive width. Gives you up to 50% more power than a conventional V-belt drive of equal width . . . or the *same* power in as little as  $\frac{2}{3}$  the space!

Belt matching problems are eliminated . . . belt speed ratio and belt position remain more constant from no load to full load for smoother, cooler running, less wear. Just *two* cross sections of Poly-V\* Belt meet every heavy duty power requirement.

Write for Poly-V Drive Bulletin #6638

\*Poly-V is a registered Raybestos-Manhattan trademark.

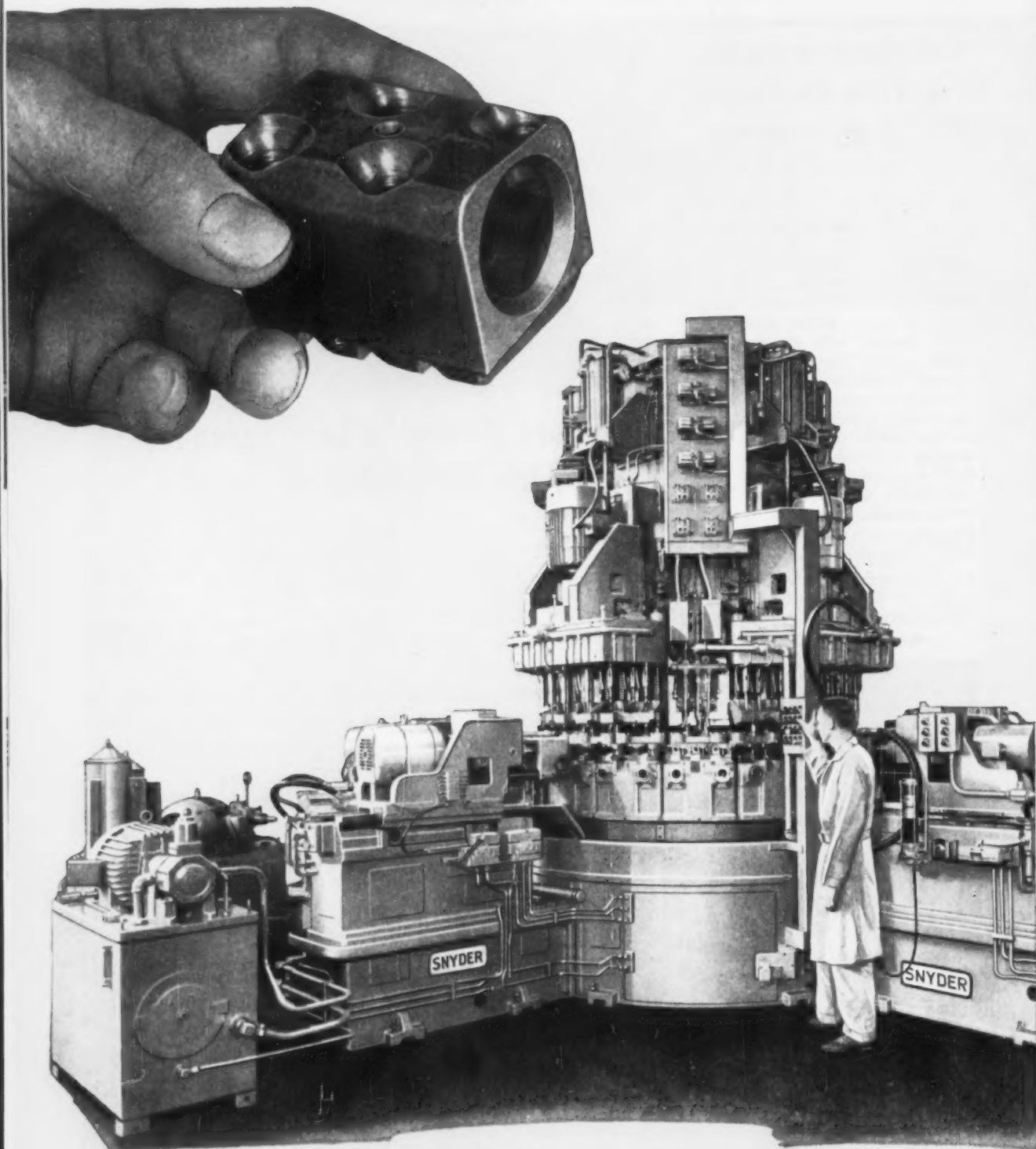
IF YOU USE V-BELTS, SPECIFY CONDOR OR R/M SUPER-POWER  
The "Smoothest Running V-Belts Made"

BELTS • HOSE • ROLL COVERING • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES  
MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY  
**RAYBESTOS-MANHATTAN, INC.**

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls



# **Simplified Automation in Successfully Applied in New**



# Machining Small Parts is Snyder Center Column Machine

The principle of automation is inherent in the design of this machine which performs, in its continuous 16-station cycle, 25 operations equalling the performance of two or three ordinary machines. The workpiece is a small automotive steering gear ball nut  $2\frac{1}{2}" \times 1\frac{5}{8}" \times 1\frac{7}{8}"$ . Production is 331 pieces per hour.

Three workpieces are loaded and automatically clamped in each of the 16 fixtures on the 96" index table. A unique feature of the machine is its special heavy-duty cast iron center column 108" high and 48" in diameter. This massive column is necessary to withstand the high vertical thrust loads imposed by six heads

mounting 9 spindles each which drill, flat bottom drill and radius chamfer four recirculating ball holes and tap drill and chamfer one hole in the same part face.

The table is also designed to withstand high horizontal thrust loads for core drilling, chamfering and reaming the threaded shaft hole which requires three spindles for each of the seven Snyder heavy-duty way type units.

The machine, one of the largest of its type, weighs 50,000 lbs., requires 288" x 312" floor space and stands 156" high overall.

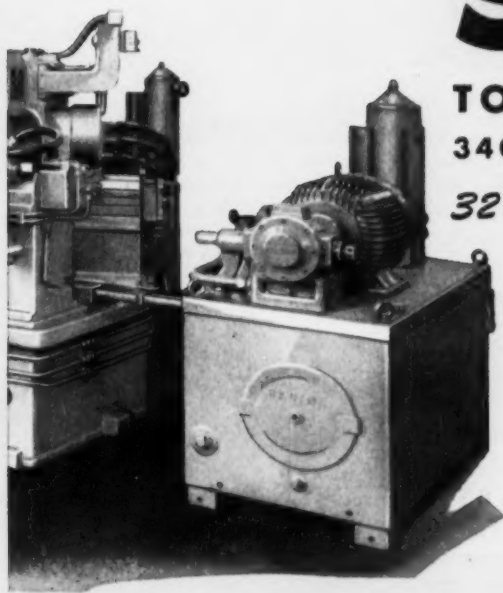
If you have an automation problem in machining small parts, this type of Snyder machine may be the right answer.

# SNYDER

**TOOL & ENGINEERING COMPANY**

**3400 E. LAFAYETTE • DETROIT 7, MICHIGAN**

*32 Years of Special Machine Tools with Automation*



**ENTHONE***Leads***in SPECIALTY  
FINISHING PRODUCTS****METAL STRIPPERS****"ALUMON"**  
for Plating on Aluminum**RUST REMOVERS****RUST PROOFING  
COMPOUNDS****ENAMEL STRIPPERS****METAL BLACKENING  
COMPOUNDS****Metal Cleaning and  
Degreasing Compounds****Conversion Coatings  
for Zinc and Cadmium****STOCK POINTS:**

Seattle, San Francisco,  
Los Angeles, Chicago,  
Detroit, Dayton,  
Cleveland,  
Binghamton, New Haven

**WORLD-WIDE  
DISTRIBUTION**

... ALSO IN  
Canada, Brazil,  
England, France,  
Sweden and Germany

Since 1930, ENTHONE Incorporated has developed and brought to the metal finishing market many specialty products and processes. Often these products have provided the answers to finishing problems previously unsolved. ENTHONE ENSTRIPS, for example, are patented products for the selective dissolving of one metal plated on another without attacking the base metal.

**ENSTRIP A**—U.S. Patent No. 2,649,361—was the first product ever offered for dissolving nickel plate without attack on the steel basis metal.

**ENSTRIP 165-S**—U.S. Patent No. 2,698,781—was the first product ever offered for dissolving nickel from copper base alloys without attack on the basis metal. And there are many other selective strippers in the ENSTRIPS group to meet all requirements.

If you have a metal finishing problem, ask **ENTHONE first!** Write now for the folder "They are HERE..." describing **20** ENTHONE answers to difficult finishing problems.

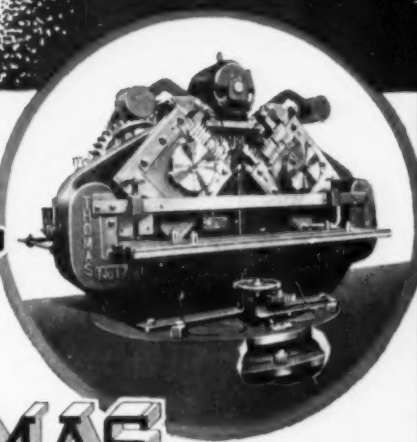
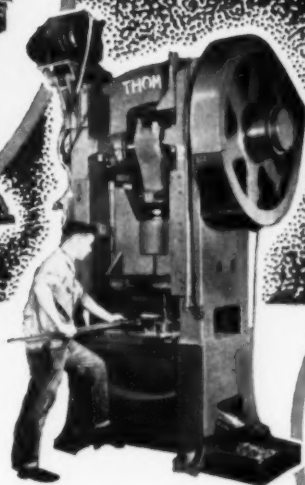
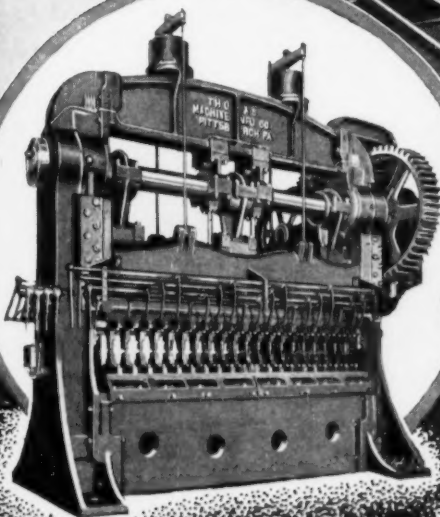
**ENTHONE**  
INCORPORATED

442 ELM STREET, NEW HAVEN 11, CONNECTICUT  
*Metal Finishing Processes • Electroplating Chemicals*



AS IN THE PAST HALF CENTURY

for '57



For over 50 years Thomas has served the steel industry with equipment designed to increase output and decrease operating costs. Make sure the equipment you buy meets the needs of today...specify THOMAS.

ABOVE — Single-crank straight-side press, one of many Thomas models

**THOMAS**  
MACHINE MANUFACTURING CO.

*Punches · Shears · Presses · Benders · Spacing Tables*



## BE COST-WISE - STANDARDIZE

Select all the parts you need from the full line of 7124 standardized products listed in the BOSTON GEAR CATALOG.

Get "off-the-shelf" delivery, anywhere in U. S. or Canada, from local stocks at 100 BOSTON GEAR DISTRIBUTORS.

For drive design or maintenance, it's the trouble-free, cost-wise way to lasting TRANSMISSION ECONOMY.

You simplify planning; you save time and expense; you get products top-rated for quality and performance. Boston Gear Works, 72 Hayward St., Quincy 71, Mass.



**CATALOG No. 56** lists all products; includes 50 pages of simplified engineering data to help you plan lower cost drive design, plant maintenance.

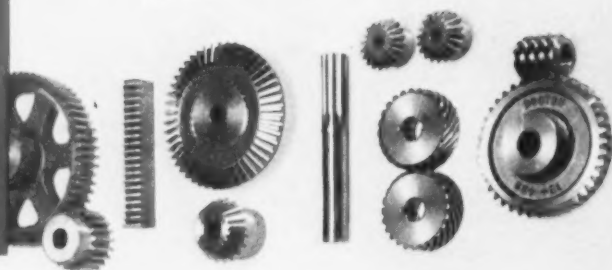
Order from your local

**BOSTON** *gear*  
DISTRIBUTOR

at factory prices

For nearest Distributor, look under "GEARS" in the Yellow Pages of your Telephone Book.

STANDARD STOCK GEARS



SPROCKETS AND CHAIN

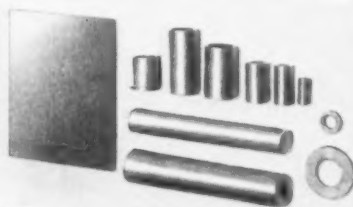


BORED-TO-SIZE  
SPROCKETS  
with Keyway & Set Screw

Certified BOSTON... BRONZE BEARINGS



Oil-impregnated BOST-BRONZ BEARINGS



• FLANGED CARTRIDGES • PILLOW BLOCKS • COUPLINGS • UNIVERSAL JOINTS • BALL BEARINGS



RATIOMOTORS

FLANGED REDUCTORS  
1605 different types and ratios FROM STOCK

REDUCTORS



57BG

# Wherever metal needs heat

## *LINDBERG knows how best to apply it*



If you have any part in choosing the equipment or methods of applying heat to metal it makes sense to talk it over with Lindberg. The safest way to be sure that you have the right answer for any application of heat to industry is to consult the most widely experienced experts you can find. We believe we have them here at Lindberg. Our business is concerned only with the development of industrial heating equipment and we manufacture the most complete line in the field; heat treating furnaces, melting furnaces, high-frequency induction units, ceramic kilns; big ones, small ones, electric or fuel-fired, built in our plant or field-erected.

Lindberg is a world-wide organization, and through its subsidiaries abroad has available the latest developments in heat applications in

foreign industry. Over the years Lindberg research laboratories and its staff of furnace and process engineers have pioneered many of the most important developments in the industrial heating field, from the original Cyclone tempering furnace to the revolutionary new Induct-O-Ring shown and described below.

This design staff is ready to apply its experience to your requirements and recommend or create the equipment needed best to fulfill them, then thoroughly test the practicality of its recommendations through Lindberg's unique pilot plant operation. You can be sure you have the right answer when you leave it to Lindberg. So get in touch with your nearest Lindberg Field Representative (we have them in all major industrial centers) or write us direct.

### **Lindberg's Revolutionary New Induction Heat Treating Furnace**

- For carbonitriding, bright hardening, carburizing of small parts
- No elements, no burners    ● No fuel or electric connections in furnace    ● Built like a fine machine tool    ● Precise temperature control
- Very low maintenance
- Quiet, automatic, trouble-free

**induct-O-ring\***

\*U.S. and foreign patents pending



**LINDBERG ENGINEERING COMPANY** 2452 West Hubbard Street, Chicago 12, Illinois

Los Angeles Plant: 11937 S. Regentview Ave., at Downey, Calif.

# ELECTROMET SERVICE MAKES

ELECTROMET makes available many technical services to help metal producers make the most effective use of alloys.

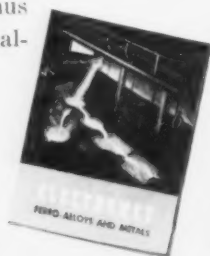
Experienced ELECTROMET engineers work hand-in-hand with steel melters, iron foundrymen, and non-ferrous producers in the selection and use of alloys and alloying materials. Their consultation service includes furnace techniques and melting operations as well as casting, rolling, and other forming practices. ELECTROMET's engineers always have recourse to the vast technical experience of:

**One of the largest metallurgical research laboratories in the world.** More than 300 skilled research scientists, engineers, and technicians at ELECTROMET's Metals Research Laboratories work constantly to provide technical data and assistance on all phases of metallurgy.

**Some of the best-qualified advisers on the use of alloys in the country.** Electric furnace, open hearth, and foundry specialists from ELECTROMET's Metallurgical Service Division draw on years of experience to help you resolve immediate technical problems or present the latest findings of their advanced work in specialized areas of interest to you.

In this way, ELECTROMET translates technical improvements and discoveries into an invaluable service available to all customers—a bonus when you buy ELECTROMET's quality products.

Get all the facts about ELECTROMET's products and services. Write for our catalog, "ELECTROMET Ferro-Alloys and Metals."



## ELECTRO METALLURGICAL COMPANY

*A Division of Union Carbide and Carbon Corporation*

30 East 42nd Street  New York 17, N. Y.

*Offices:* Birmingham • Chicago • Cleveland • Detroit • Houston • Los Angeles  
Phillipsburg, N. J. • Pittsburgh • San Francisco

*In Canada:* Electro Metallurgical Company, Division of Union Carbide Canada Limited, Welland, Ontario

**METALS DO MORE ALL THE TIME  
... THANKS TO ALLOYS**

# Electromet

Trade-mark

The terms "Electromet," "EM," "Mansiloy," "Mantemp," "Simplex," "SM," and "SMZ" are trade-marks of Union Carbide and Carbon Corporation.



### SOME OF THE MORE THAN 100 DIFFERENT ALLOYS AND METALS AVAILABLE FROM ELECTROMET:

**BORON**—Ferroboron, Manganese-Boron, Nickel-Boron, Boron Carbide.

**CALCIUM**—Calcium-Silicon, Calcium-Manganese-Silicon, Calcium Metal, Calcium Boride.

**CHROMIUM**—38 Chromium Alloys including SIMPLEX Low-Carbon Ferrochrome, Low- and High-Carbon Ferrochrome, Exothermic Ferrochrome and Silicon-Chrome, Foundry Ferrochrome and Ferrosilicon-Chrome, Charge Chrome,



# THE DIFFERENCE!



Experienced ELECTROMET engineers are always ready to assist customers in the selection and use of alloys and metals for the production of steel, iron, and non-ferrous metals.

Electrolytic Chromium Metal, Chromium Briquets.

**COLUMBIUM**—Ferrocolumbium, Ferrotantalum-Columbium.

**MANGANESE**—13 Ferromanganese Grades, MANSILOY Alloy, 3 Silicomanganese Grades, Electrolytic Manganese Metal, Silicomanganese and Ferromanganese Briquets, MANTEMP Ferromanganese.

**MOLYBDENUM**—85% Molybdenum Powder.

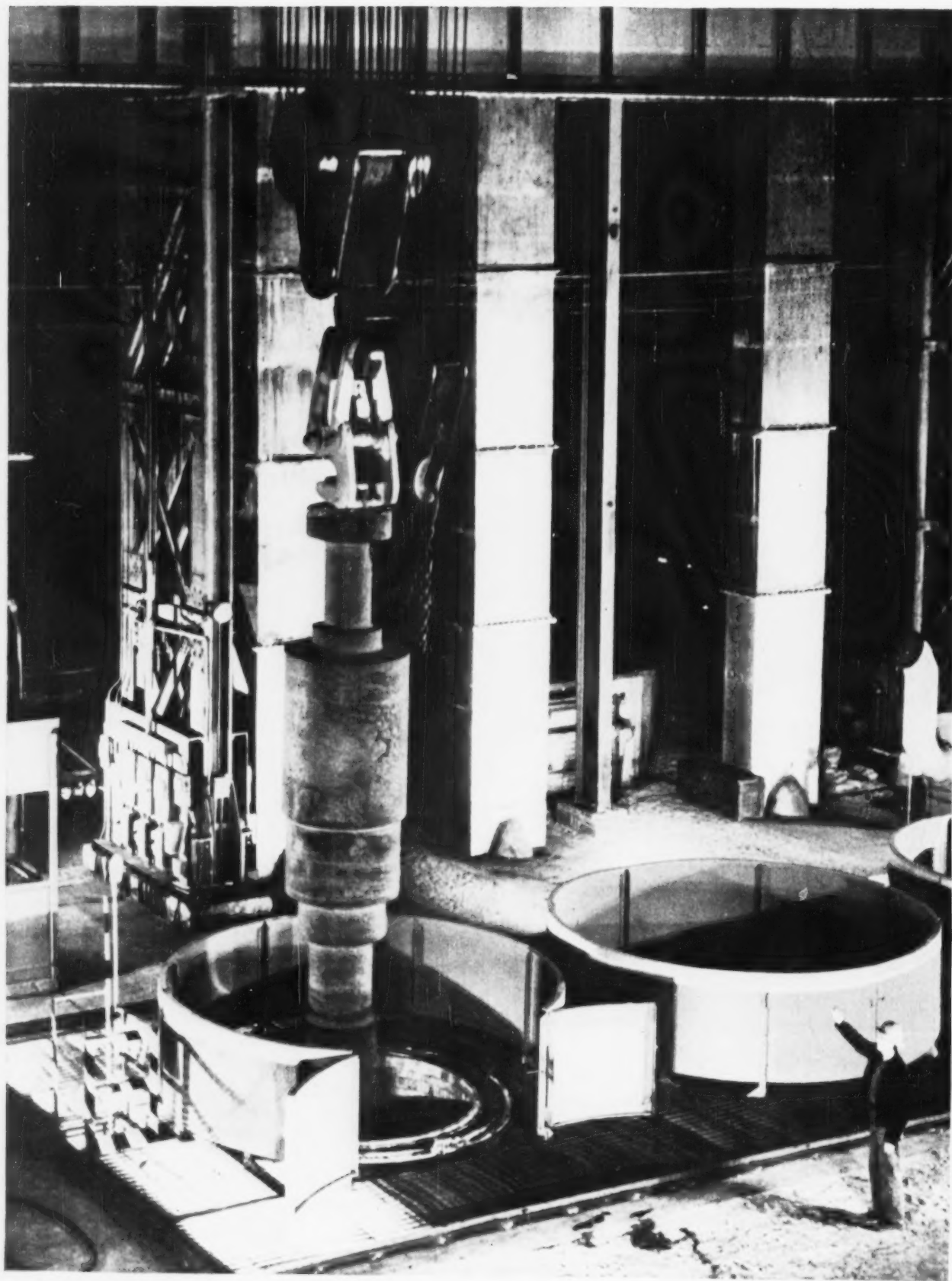
**SILICON**—28 Silicon Alloys including Regular and Low-Aluminum Ferrosilicon, Silicon Metal, Silicon Briquets, "SMZ" Alloy, Magnesium Ferrosilicon, Barium-Silicon.

**TITANIUM**—Titanium Metal Sponge, Ferrotitanium, Silicon-Titanium, Manganese-Nickel-Titanium, Aluminum-Titanium, 70% Ferrotitanium (Boron-Bearing).

**TUNGSTEN**—Ferrotungsten, Tungsten Powder, Calcium Tungstate, Ammonium Paratungstate, Self-Reducing Tungsten.

**VANADIUM**—Ferrovanadium, Vanadium-Aluminum, Vanadium Oxide (Fused), Sodium Polyvanadate, Ammonium Metavanadate.

**ZIRCONIUM**—2 Zirconium-Silicon Alloys, Nickel-Zirconium.



# Giants, too, heated without distortion

*Westinghouse pressurized furnaces keep 30-ft forgings "straight as an arrow" at U. S. Steel*

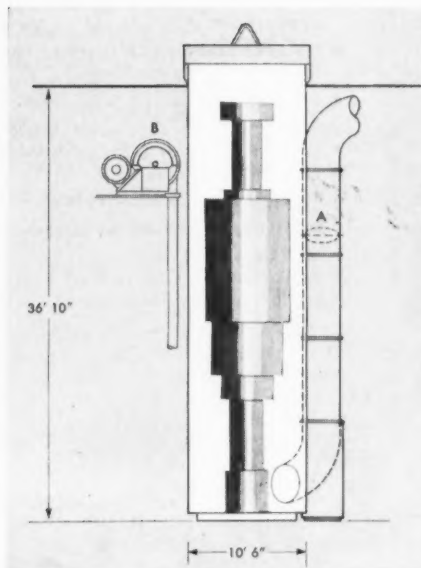
Three large, Westinghouse pit-type furnaces at U. S. Steel's Homestead Works are built to pamper giant forgings. This turbine rotor, for example, lifts out straight and true at 1830°F. During eight hours of soaking heat the temperature along its 30-foot length never varied as much as 10°F. Distortion was never a problem because of Westinghouse temperature control and positive pressure furnace design.

In this design even heating is assured through back pressure control of combustion gases. With positive pressure in the furnace any air leakage is always outward. Thus localized chilling of the work is prevented. The furnace is tangentially fired by means of spirally located burners and is equipped with 3 zones of automatic temperature control. Since the products of combustion are sucked out from the bottom of the furnace, heat currents make two passes the full length of the work...once upward, once downward.

In Westinghouse experience with gas, electric, or induction heating equipment, we have undoubtedly solved a problem like yours. You can be sure of our broad experience by calling your local Westinghouse industrial heating engineer today or write Westinghouse Electric Corporation, Industrial Heating Division, Meadville, Pa.

J-10451

## YOU CAN BE SURE...IF IT'S Westinghouse



Positive pressure in Westinghouse pit furnaces is controlled by the motorized damper (A) in the flue exhausting combustion products. Furnace controls are grouped for single operator supervision of thermocouple readings, furnace pressure control, combustion air blower (B) and air-fuel mixture.



W. E. Collar\* reports . . .

### Facts to lick your distortion problem

Unusual facilities and experience at Westinghouse have enabled us to jump years of trial-and-error methods in engineering furnaces and induction heating equipment to prevent distortion. We're constantly after better ways to gain temperature uniformity in metal processing equipment. This is necessary not only to prevent distortion but also to obtain desired metallurgical properties.

On special problems, our equipment design engineers have the advantage of facts gained through Westinghouse metallurgical research activities. Production testing of equipment design and engineering is carried out by our Materials Manufacturing Division at Blairsville, Penna. These activities back up our long experience in gaining accurate heat distribution for positive temperature uniformity.

The results can be seen in a Westinghouse furnace used for the air tempering of rotors for atomic equipment. Accurate heat control designed into this electrically heated furnace meets demanding requirements for distortion-free work.

Another case in point is the work on distortion problems under way in our induction heating laboratory. Here equipment is being developed for distortionless hardening of automotive axles.

The teamwork that solved these application problems is your assurance of getting the latest in engineering development and the finest equipment for all your metal processing needs.

\*Manager, Industrial Heating Dept.

*The Westinghouse  
Heat-Treating Family*

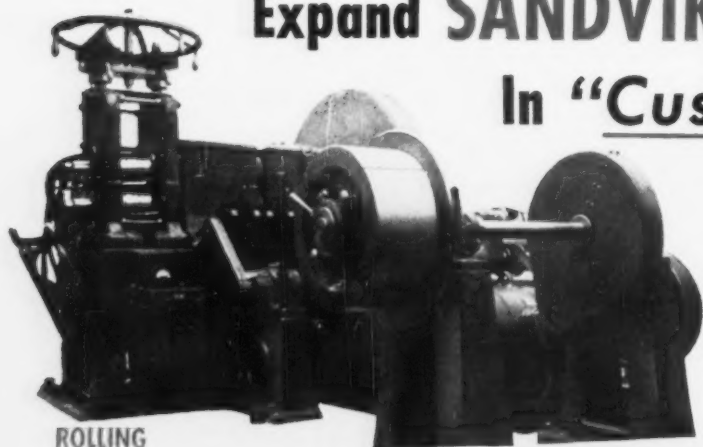
GAS • ELECTRIC • INDUCTION

# New Fair Lawn Facilities

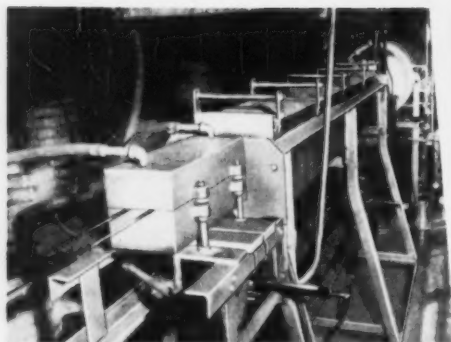
## Expand SANDVIK Service

### In "Custom-Tailoring"

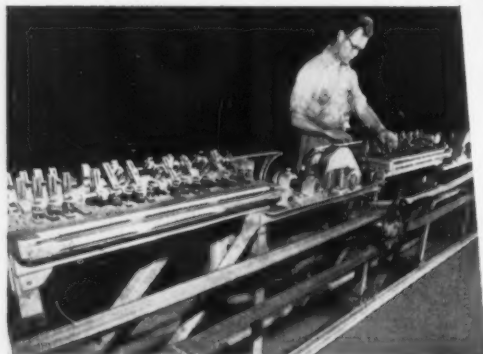
# QUALITY SPRING STEELS



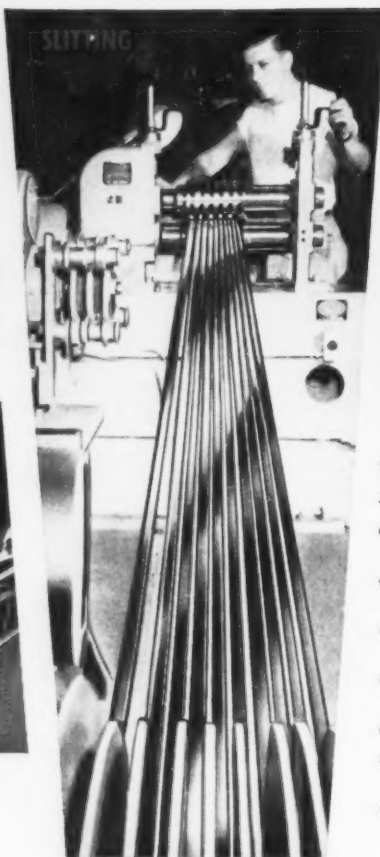
ROLLING



HARDENING and TEMPERING



EDGE FILING



SLITTING



QUALITY CONTROL

*You can get Sandvik cold rolled specialty strip steels:*

- In special analyses for specific applications.
- Precision-rolled in thicknesses to fit your requirements.
- In straight carbon and alloy grades.
- Annealed, unannealed or hardened and tempered.
- Polished bright, yellow or blue.
- With square, round or dressed edges.
- Wide range of sizes in stock — or slit to your specifications.

*Ask your nearest Sandvik office for further information or technical assistance.*

## SANDVIK STEEL, INC.

1702 Nevins Road, Fair Lawn, New Jersey  
Tel. Fair Lawn 4-6200—In N. Y. C.: ALgonquin 5-2200

Warehouses: Fair Lawn, N. J. • Cleveland • Los Angeles  
Branch Offices: Chicago • Cleveland • Detroit • Los Angeles  
SANDVIK CANADIAN LTD., P.O. Drawer 1330, Stn. O., Montreal 9, P.Q.  
SANDSTEEL SPRING DIV., Fair Lawn, N. J. • Industrial Springs  
SANDVIK COROMANT DIV., Fair Lawn, N. J. • Carbide Tools  
Works: Sandviken, Sweden • Hellefors, Sweden

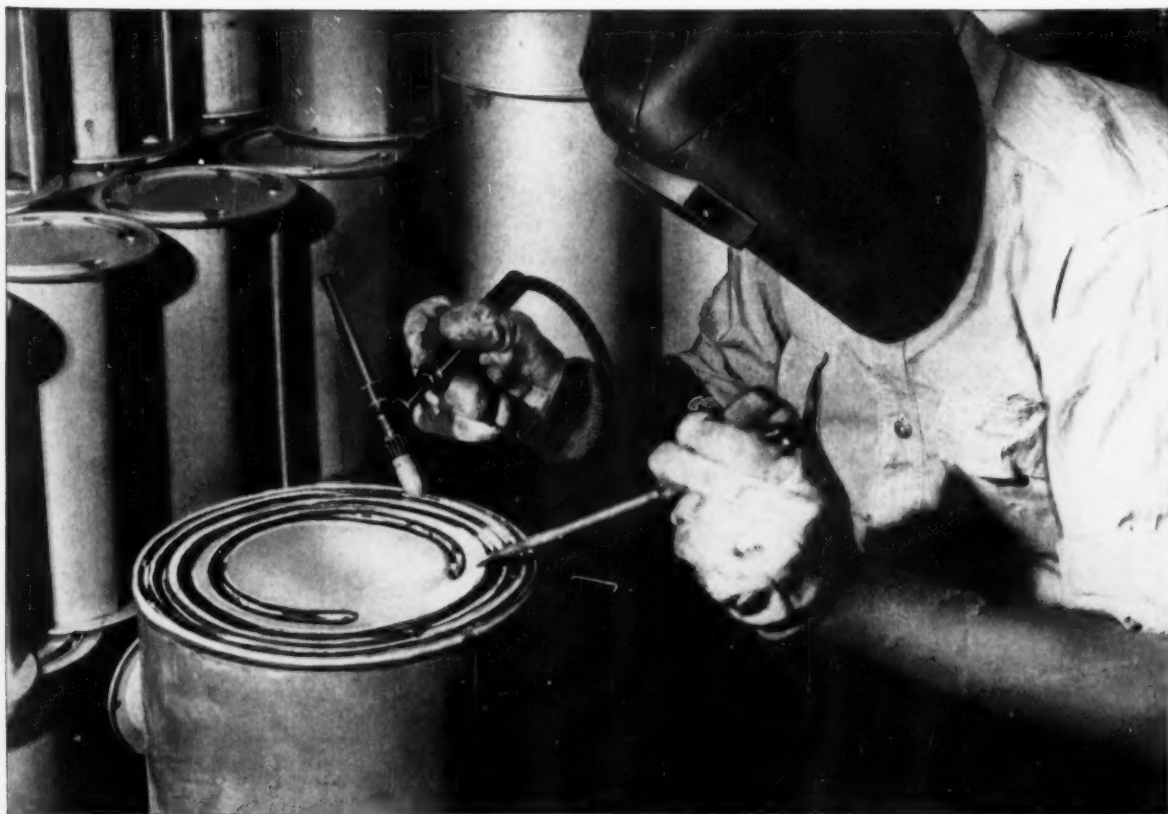


SS-114



Main Office and Plant  
Fair Lawn, New Jersey





MULTIMET alloy wraps are joined by welding in the fabrication of aircraft cabin heaters.

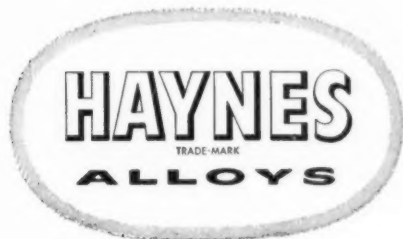
## MULTIMET Alloy Wraps Absorb the Heat from a 3500 deg. F Flame

MULTIMET alloy wraps are used to absorb the intense heat from burning aviation gasoline in aircraft cabin heaters. The spirally wrapped alloy sheet transfers the combustion heat to fresh ventilating air. Very thin sheet—only 0.025 in. thick—does an excellent job here despite the high metal temperatures and the oxidizing conditions.

Rigorous 1,000-hr. tests were conducted before MULTIMET alloy was selected for this job. It has now been the standard material for seven years. The excellent high-temperature properties of the alloy made it possible for designers to use

thin sections, which insure a light, compact heater, with excellent heat-transfer efficiency.

MULTIMET alloy is one of many HAYNES high-temperature alloys for economical use over a wide range of operating conditions. It has given good service for engine manifolds, turbine blading, heat-treating equipment and many aircraft components. For a copy of a booklet describing HAYNES high-temperature alloys, and for prices and sizes of MULTIMET alloy, get in touch with the nearest Haynes Stellite Company office.



### HAYNES STELLITE COMPANY

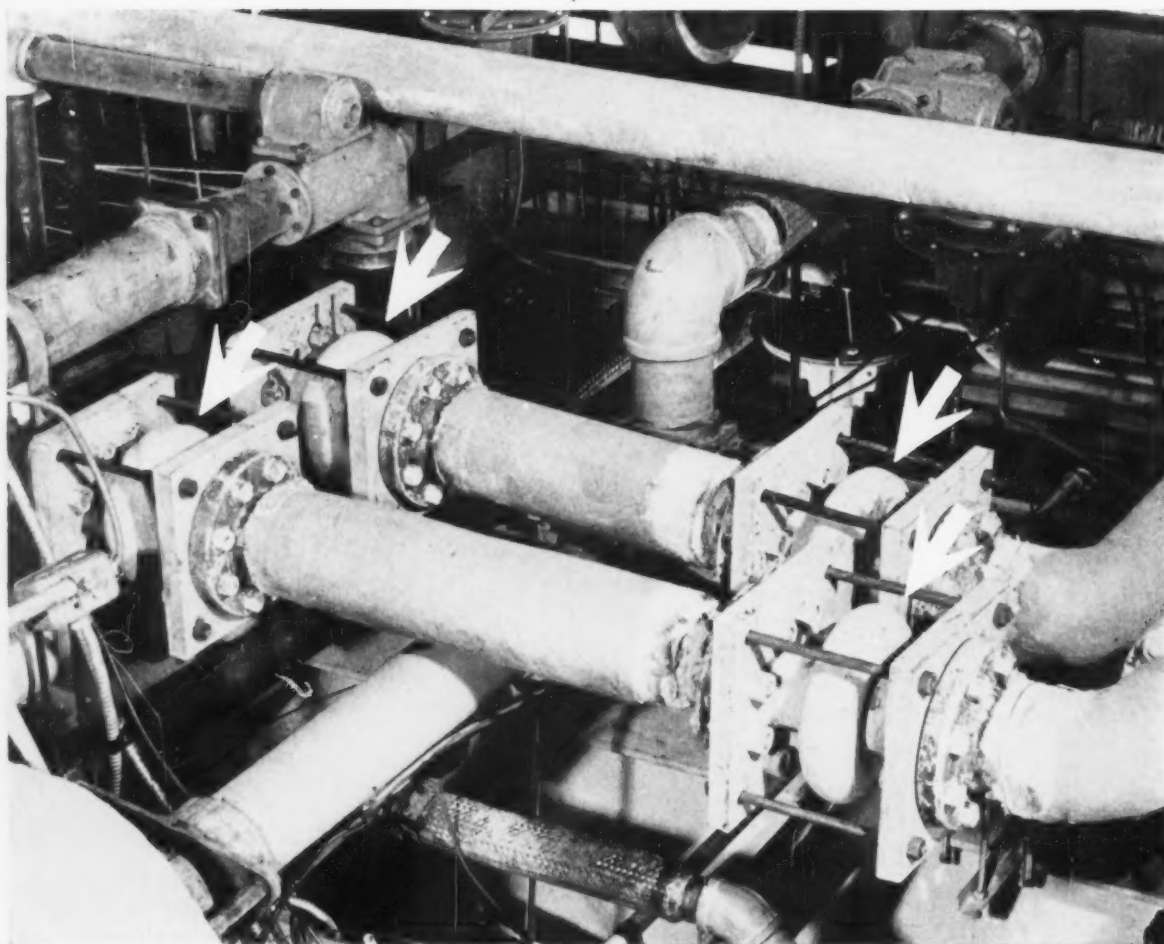
A Division of Union Carbide and Carbon Corporation



General Offices and Works, Kokomo, Indiana

Sales Offices

Chicago • Cleveland • Detroit • Houston • Los Angeles • New York • San Francisco • Tulsa



## "Only *Carpenter* Stainless Tubing gives us failure-proof service"

The manufacturer of these four truly maintenance-free packless expansion joints (shown by arrows, above) has tried other stainless tubing, but says Carpenter Stainless Tubing is the "only one that renders failure-proof service".

These joints absorb thermal expansion, operating at pressures up to 210 psi and temperatures up to 650°F. They are typical of expansion joints made from Carpenter Tubing which operate at pressures up to 10,000 psi or temperatures as high as 1800°F. Once installed, they have never been replaced. Some have been in service over 15 years. The quality and uniformity of Carpenter Stainless Tubing contributed greatly to the trouble-free fabrication and maintenance-free service of these joints.

If an extra measure of quality in stainless tubing and pipe can improve your products or operation, call your Carpenter Distributor. He's your nearby source of better stainless tubing and pipe.

MEMBER



**The Carpenter Steel Company,  
Alloy Tube Division, Union, N. J.**

Export Dept.: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

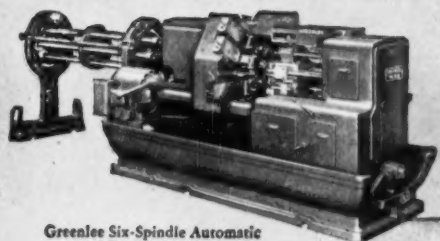
# *Carpenter*



## **Stainless Tubing & Pipe**

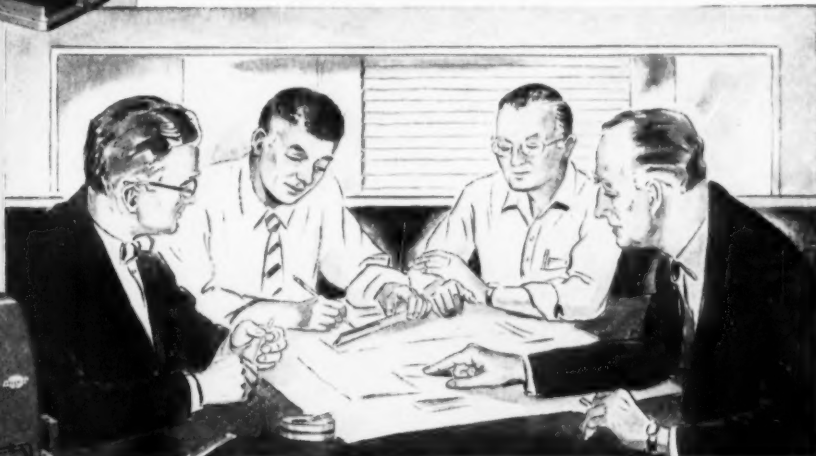
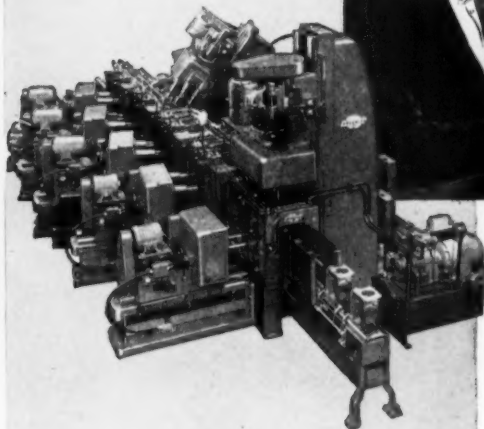
## GREENLEE OFFERS

### A PROFIT-MAKING INVESTMENT IN HIGH-PRODUCTION MACHINE TOOLS



Greenlee Six-Spindle Automatic  
Bar Machine.

Greenlee 22-Station Automatic  
Transfer Machine for machining  
transmission cases.



Greenlee creative thinking, Greenlee engineering and Greenlee experience combined with that of your own engineers will help you "produce more at lower cost."

Ideas, engineering, experience and facilities of Greenlee Bros. & Co. develop improved methods and machines for greater and greater productivity of future models.

Greenlee's adequate facilities expedite the transition from production ideas to production machines . . . a profit-making investment at work in your plant.

#### GREENLEE STANDARD AND SPECIAL MACHINE TOOLS

- Multiple-Spindle Drilling and Tapping Machines
- Transfer-Type Processing Machines
- Six and Four-Spindle Automatic Bar Machines
- Hydro-Borer Precision Boring Machines

*Write for Further Information*



Greenlee 10-Station  
Automatic Transfer  
Machine.



GREENLEE BROS. & CO.  
1801 Mason Ave.  
Rockford, Illinois

# Take a new







# look...

at how *Carpenter*  
can help you  
free dollars  
for more productive uses

As you know, every dollar tied up in inventory shortens productive cash by an equal amount. And inactive stocks of specialty steels are an unnecessary luxury.

That's why we ask—have you called Carpenter lately?

If not, you may be missing a good bet to shift inventory cash into more profitable channels. Here's why.

Your Carpenter Mill-Branch Warehouse is now in the best position ever to meet your day-to-day needs for tool, stainless and alloy steels . . . quickly and without hesitation.

What's more, this comprehensive Mill-Branch Warehouse program is backed by direct service from the Reading Mill to quickly meet unusual requests for special grades and sizes.

Add together the order desk people . . . your Carpenter Representative . . . the warehouse crew, and the office staff, and you have team action that spells increased dependability. Whether you want information on prices . . . technical literature to simplify heat treating . . . or actual in-shop assistance — there's a specialist at Carpenter ready to help you.

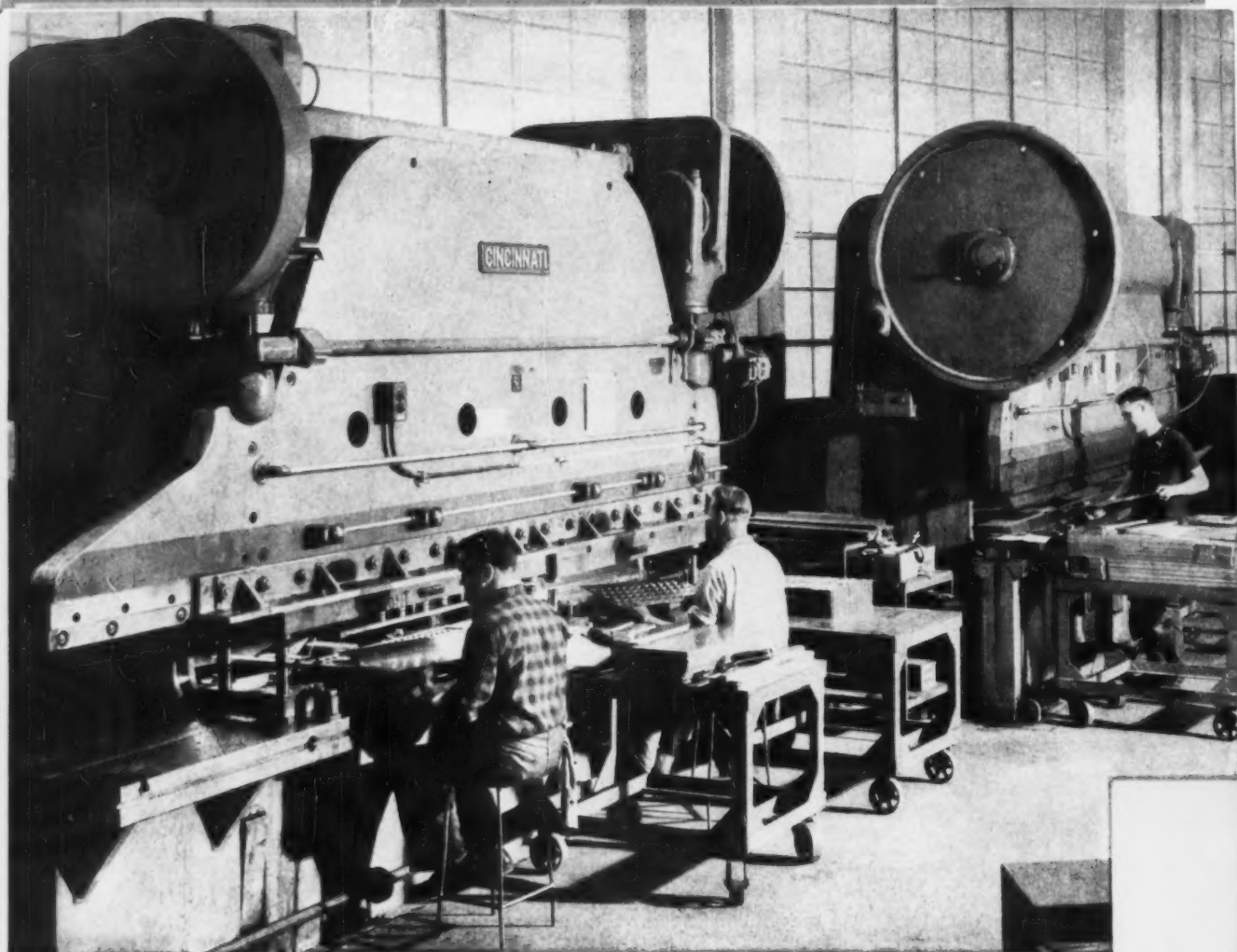
Start today! Let your nearby Carpenter Mill-Branch Warehouse be your own stock room . . . help you free your inventory dollars for more productive uses. A phone call is all that's needed to get you underway. The Carpenter Steel Co., 121 W. Bern St., Reading, Pa.

## *Carpenter*

**Mill-Branch Warehouse Service**



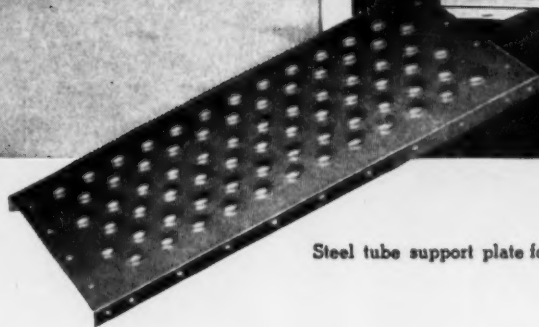
Mill-Branch Warehouses, Offices and Distributors  
in Principal U. S. Cities



**BATTERIES of accurate**  
**CINCINNATI Shears**  
**and Press Brakes**

*cut production  
costs*

at THE TRANE COMPANY, La Crosse, Wisc.



Steel tube support plate for cooling coils.

Three Cincinnati Shears and four Cincinnati Press Brakes are profitable producers in this finely equipped shop.

The battery of shears produces accurate blanks, sheared to micrometer accuracy, which are later formed and pierced on the Cincinnati Press Brakes.

The photo at left shows multiple holes being pierced and extruded to a tolerance of  $\pm .002$ " in a steel tube support plate for Trane cooling coils. On this operation alone, floor to floor

time **was cut from 3-1/3 minutes to 1/2 minute** by the use of Cincinnati Press Brakes. The speed and outstanding accuracy of these Cincinnati Machines have lowered costs and increased quality of the air conditioning equipment manufactured by this leading company.

Write **Department B** for Catalog S-7R on Cincinnati All-Steel Shears and Catalog B-4R on Cincinnati Press Brakes. We also suggest you consult our Application Engineering Department about your shearing and forming problems.

# THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES



# MARVEL NO. 8 BAND SAW

makes a tough job  
EASY...

SEGMENTS 16"x18" SAE 4130 FORGING

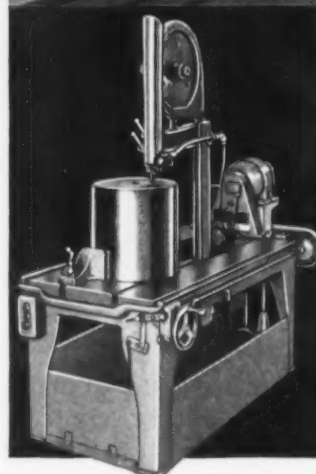


**FLOOR TO FLOOR IN 5 HOURS...** no special jigs, fixtures or set-up required

The versatility, simplicity of operation and unmatched efficiency of a MARVEL No. 8 Universal Metal Cutting Band Saw makes it the best all-around saw you can buy.

Take the job illustrated, as an example. Three equally spaced re-entrant cuts were required to segment a large, heavy die forging. The work was merely placed on the table between the vise jaws with the first lay-out line positioned to bisect the blade. Feed pressure was set on the direct-reading scale and the cut started. On a MARVEL No. 8, the work is always stationary and the blade is fed into the work; the cutting edge of the blade is always square with the table throughout its full feed traverse, which eliminates the need for special fixtures. The pre-set Automatic Overload-Relief Power Feed kept the blade moving into the work only as fast as it could freely remove the metal; as the vertical length of the cut decreased, the blade was automatically fed faster, thus increasing cutting speed. Upon completion of a cut, the blade was rapidly returned to its starting position by a rapid traverse handwheel located at the operator's position. Succeeding cuts were made in the same manner, with the same ease and speed.

Jobs like this aren't done every day, but they serve to emphasize the versatility of the MARVEL No. 8, a truly universal metal cutting saw. If you cut, machine or fabricate metal, this is a sawing machine you should know about. Write for catalog.

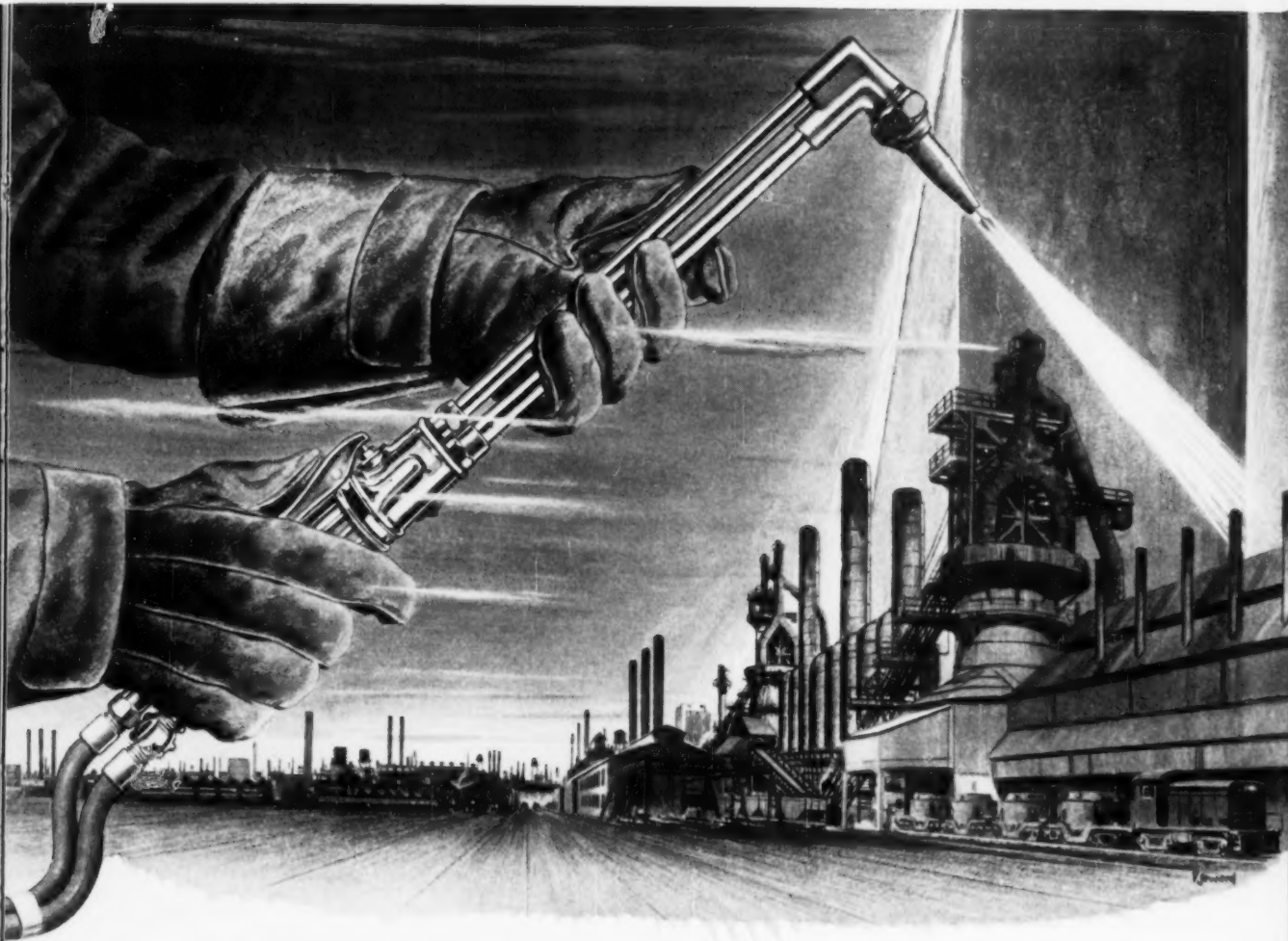


**ARMSTRONG-BLUM MFG. CO.**  
5700 BLOOMINGDALE AVE. · CHICAGO 39, ILL.

**MARVEL** Metal Cutting  
**SAWS**  
Better Machines—Better Blades

5-1302





#### CHOICE OF LEVER POSITION



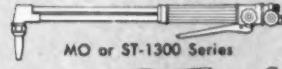
MO or ST-1000 Series



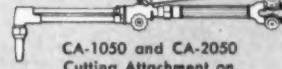
MO or ST-1100 Series



MO or ST-1200 Series



MO or ST-1300 Series



CA-1050 and CA-2050  
Cutting Attachment on  
Model 310 Welding Torch.

Select either Monel (MO) or forged bronze (ST) head; available in four lengths: 21", 27", 36" and 48", with 90°, 75° and 180°. 45° on ST models only. Some design features contained in cutting attachments, with forged bronze head.

## OPERATORS PREFER *this torch for hot, tough jobs!*

#### LICK YOUR HOTTEST JOBS

... solid stainless steel mixing tube absorbs heat slowly, keeps gases below flashpoint.

#### LAST LONGER UNDER ROUGH, TOUGH USE

... because they're made of toughest materials ... special heat resisting bronze heads, forged brass bodies.

#### EASIER TO HANDLE, EASIER TO MAINTAIN

... hand-fitting oval shaped grip ... well balanced for ease of handling ... practical design for ease of service after long use.

*Make your tough jobs easy, your easy jobs a pleasure ... see your Victor dealer now!*

# VICTOR

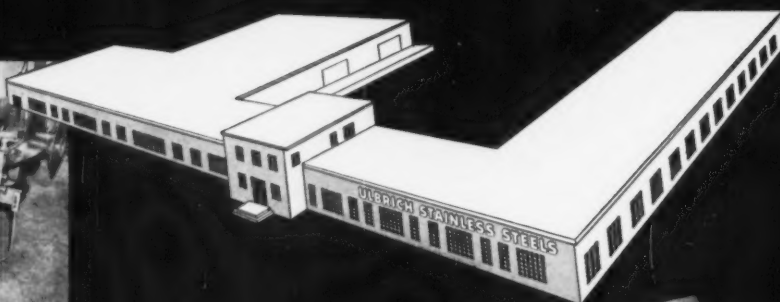
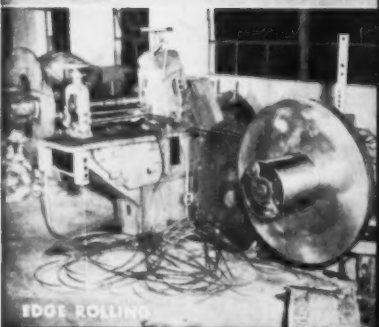
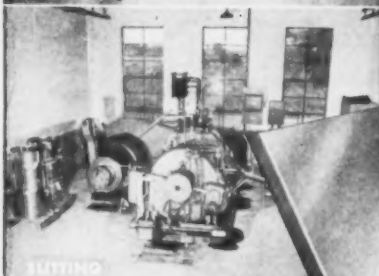
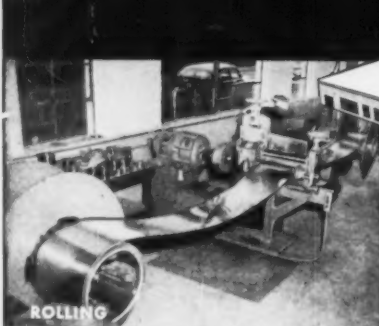
for welding

## VICTOR EQUIPMENT COMPANY

Mfrs. of welding & cutting equipment; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

844 Folsom St., San Francisco 7 • 3821 Santa Fe Avenue, Los Angeles 58

the biggest little mill in the country



# ULBRICH Stainless Steels

With more facilities than ever before

to convert **STRIP**, Flat Wire,

and other Stainless Steels

**TO YOUR CLOSEST REQUIREMENTS—**

**EXACTLY AS YOU WANT IT.**

One foot or one pound and up

rolled, slit, sheared, flattened,

edge rolled, annealed and

**DELIVERED PROMPTLY.**



## ULBRICH Stainless Steels

Established 1924

WALLINGFORD, CONN.

Phone: COLony 9-7771

# ARMSTRONG

*Quality*



## TOOLS

### More than meets the eye

There are extra values in ARMSTRONG TOOLS that become apparent only with use.

**TOOL SENSE** — convenience in use — the most efficient "*tool approach*" built into ARMSTRONG Tool Holders; the balance and "*feel*" of an ARMSTRONG Wrench; the *rigidity* of ARMSTRONG "C" Clamps; the extra *toughness* of ARMSTRONG Lathe Dogs and Eye Bolts; the universal *adaptability* of ARMSTRONG Set-up and Hold-down Tools — the evidence of "*tool sense*", the understanding of each tool's requirements.

**STRENGTH** — built into each individual ARMSTRONG TOOL is a safety factor of extra *strength* — *strength* beyond any need, the inherent strength of specially selected materials enhanced by proper heat treatment and hardening.

**UNIFORM QUALITY** — the uniform quality made possible by modern manufacturing methods, in a specially-built plant equipped with every needed quality control. The name ARMSTRONG with the Arm-and-Hammer Trade Mark is universally recognized as a guarantee of finest quality.

### ARMSTRONG BROS. TOOL CO.

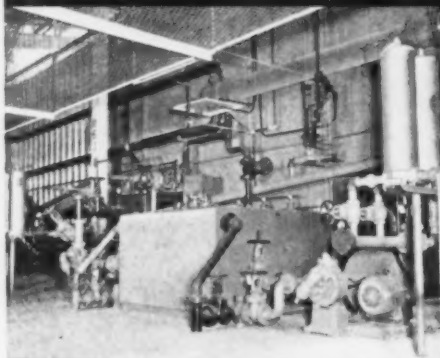
"The Tool Holder People"

5209 WEST ARMSTRONG AVE. • CHICAGO 30, ILLINOIS

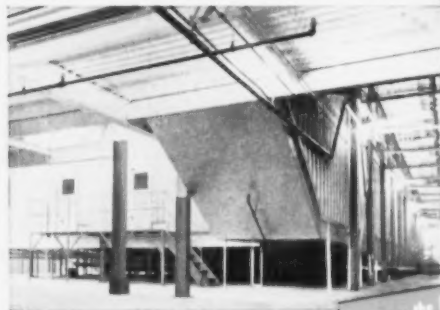


# COMPLETE *Finishing* SYSTEMS

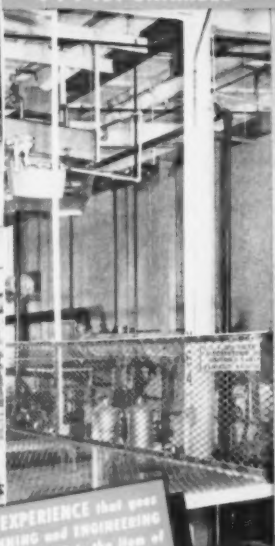
... for ENAMELS • LACQUER • PAINT • VARNISH



Combined Paint and Solvent Reservoirs, Recirculating Pumps and Temperature and Viscosity Controls on one side of Flow Coater.



View of Ventilated Drip Enclosure and inclined Tunnel to the Overhead Finish Baking Oven.



Mahon Dual Flow-Coating Machine with two separate and independently controlled Flow-Coating Units serving two parallel conveyor lines.

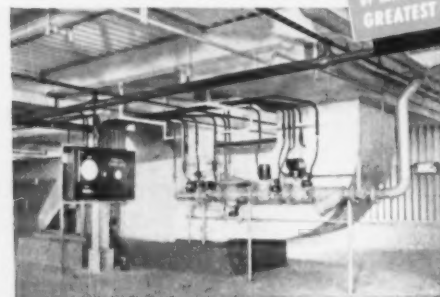
... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

## Dual Flow-Coating System CUTS Paint VOLUME, MANPOWER Requirements, and Operating COSTS!

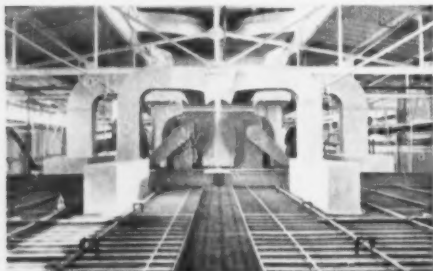
The new Flow-Coating System illustrated here has proved a tremendous saving in painting automobile hoods, fenders, fans and miscellaneous parts. The system has two parallel conveyor lines carrying parts through a dual Flow-Coating Machine—either side of which may be operated independently. Each section of the Flow-Coating Machine is served by a 450-gallon paint reservoir and a 450-gallon solvent reservoir and are fitted with automatic equipment to maintain constant paint viscosity and temperature. Other equipment in this system includes ventilated drip enclosures with sumps, scavenger pumps, and facilities for solvent flush-down, a finish baking oven and an air supply and exhaust system. This system now paints, on one line, all parts previously painted in two dip-coating systems which required an operating volume of 16,000 gallons of paint. One man operates and maintains the new Mahon System, where twelve men were required to operate and maintain the old equipment. The savings in material, labor and operating costs are obvious. If you have a finishing problem, it will pay you to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you will find them better qualified to advise you, and better qualified to do the all-important planning, engineering and coordinating of equipment . . . and, if you care to investigate, you will also find that Mahon equipment will serve you better over a longer period of time. See Sweet's Plant Engineering File for information, or write for Catalog A-657.

THE R. C. MAHON COMPANY • Detroit 34, Michigan  
SALES-ENGINEERING OFFICES in DETROIT, NEW YORK and CHICAGO

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems, Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.



One of the Gas-Fired Heating Units with Automatic Temperature Control Equipment below the Overhead Finish Baking Oven.



General view of Mahon Air Supply and Exhaust Equipment which provide Filtered Air and Ventilation for the entire system.

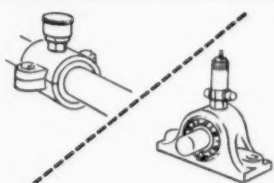
# MAHON



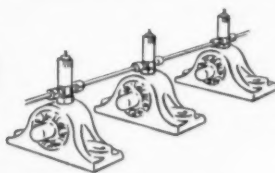
# Just 4 Easy Steps to Automatic Lubrication From One Central Point

with an **ALEMITE**  
**Accumatic®** System

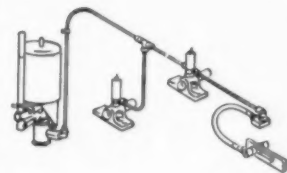
**FASTER . . . FOOLPROOF . . . LESS COSTLY!**



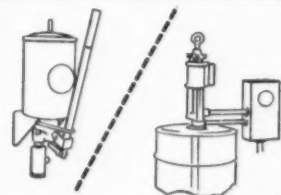
Replace grease cups or grease fittings with Accumatic fittings. (Available in same thread sizes as grease fittings, cups.)



Connect Accumatic fittings with copper tubing. (Alemite has tubing, clips and accessories for easy installation.)



Connect sliding, rotary or oscillating parts into tubing system. (Flexible hose and swivels for moving parts.)



Provide central pump to supply lubricant to system. (Ordinary hand pump or fully automatic barrel pump.)

## The fitting that "thinks for itself!"

The Alemite Accumatic System eliminates the work, worry and "human error" of manual lubrication. It fits directly on bearings—meters an exact shot of oil or grease automatically—at pre-determined intervals—while the machine operates. Cuts labor, production and maintenance costs!

## Factory-tested—field-proved!

Grueling field tests show no appreciable variation in the amount of lubricant discharged after 73,312 cycles—equal to 122 years of twice-a-day service!

## ALEMITE ACCUMATIC ADVANTAGES!

- Prevents application of wrong lubricant.
- Seals completely against damaging dirt, grit and water.
- No parts are neglected—lubricates inaccessible and dangerous bearings at regular intervals.
- Eliminates product spoilage due to over-lubrication.
- Eliminates point-by-point lubrication methods—services all bearings in one operation.
- Delivers exact amount of lubricant to bearing.

## FREE! Alemite Accumatic Catalog

Alemite, Dept. N-17  
1850 Diversey Parkway, Chicago 14, Illinois

Please send me my free copy of the complete Accumatic Catalog.

Name

Company

Address

City  Zone  State

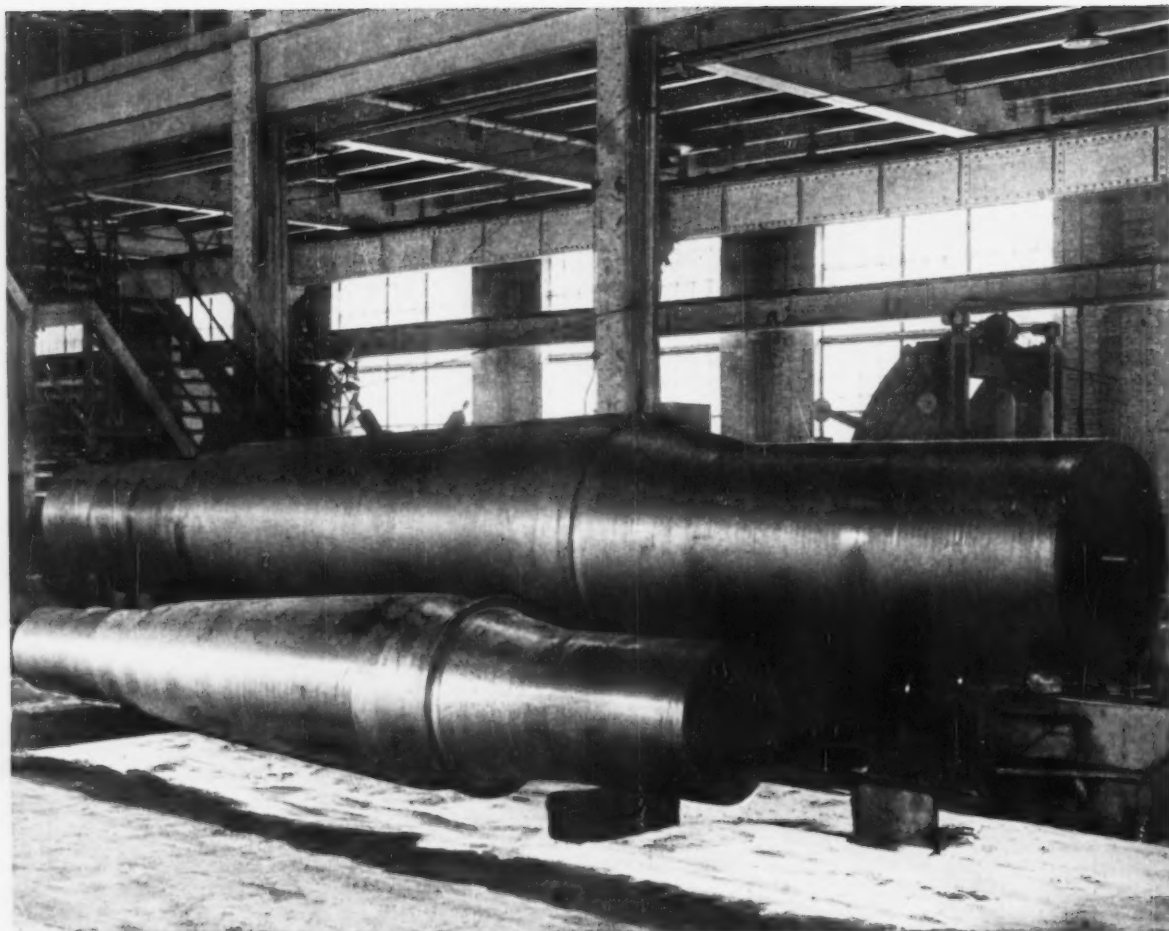


# ALEMITE

REG. U. S. PAT. OFF.

A Division of STEWART-WARNER CORPORATION





**\*Forged from 3½% Nickel Steel** — These gyratory crusher shafts weigh 102,000 and 34,000 lbs. and are 25 and 17 feet long respectively. They were produced by Bethlehem Steel Company, Steelton, Pa.

***In large forgings like this...\****  
**You get desired properties reliably  
 with Nickel Steel**

Usually husky parts like this cannot be quenched without special facilities.

How then do you get the superior mechanical properties often required in heavy-sectioned parts?

By selecting a nickel alloy steel that doesn't need a liquid quench to develop strength and toughness.

**Why Nickel?**

The tests of time and laws of metallurgy have proved nickel to be most valuable in developing high

mechanical properties in heavy forgings. Nickel, often acting with other alloying elements, increases the hardening response of steel parts too large to liquid quench. The resulting microstructure formed gives added strength and improved toughness.

**Do you have a problem?**

Nickel alloy steels are used for dependable trouble-free performance in the most demanding applications. Send us the details of your problem. We may be able to help you — write today.



64

**THE INTERNATIONAL NICKEL COMPANY, INC.**

67 Wall Street  
New York 5, N. Y.

THE IRON AGE

CONTINENTAL

LEWIS

→MEDART→



BLAW-KNOX

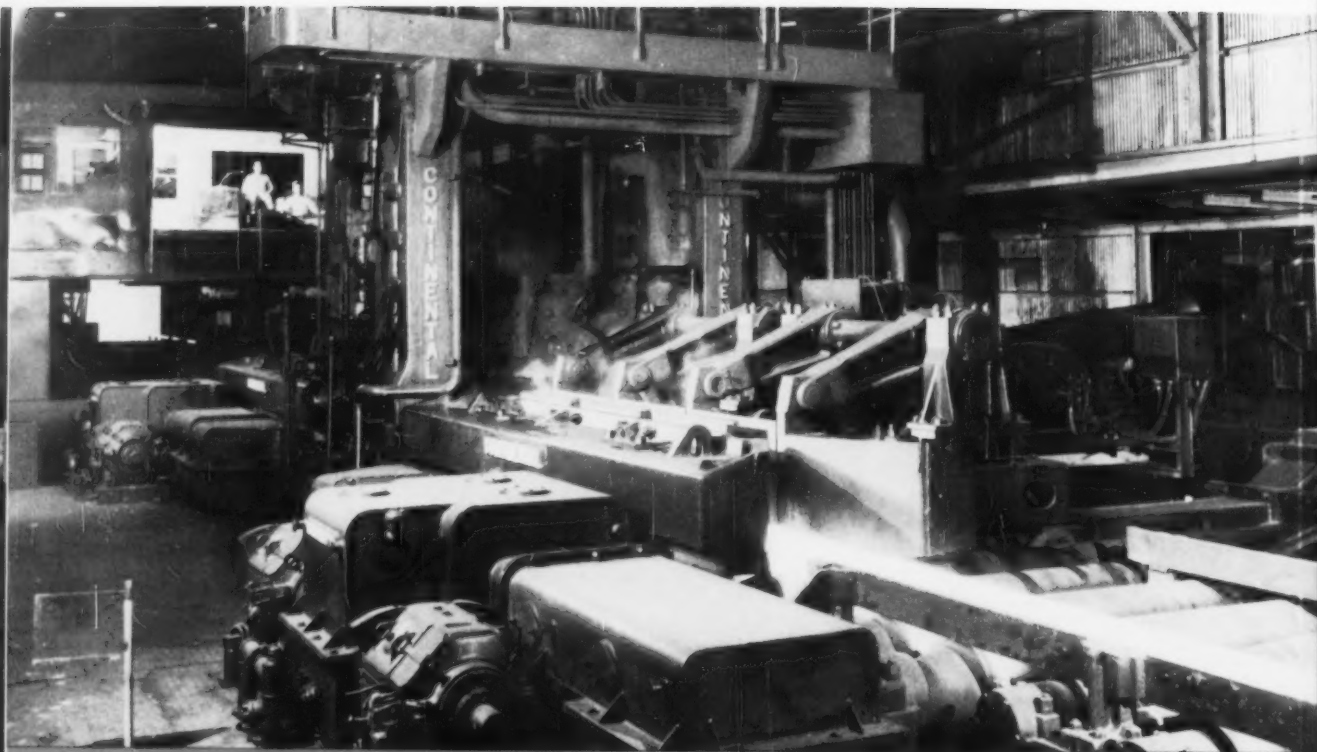


## headquarters for the best-named products serving the metals industry!

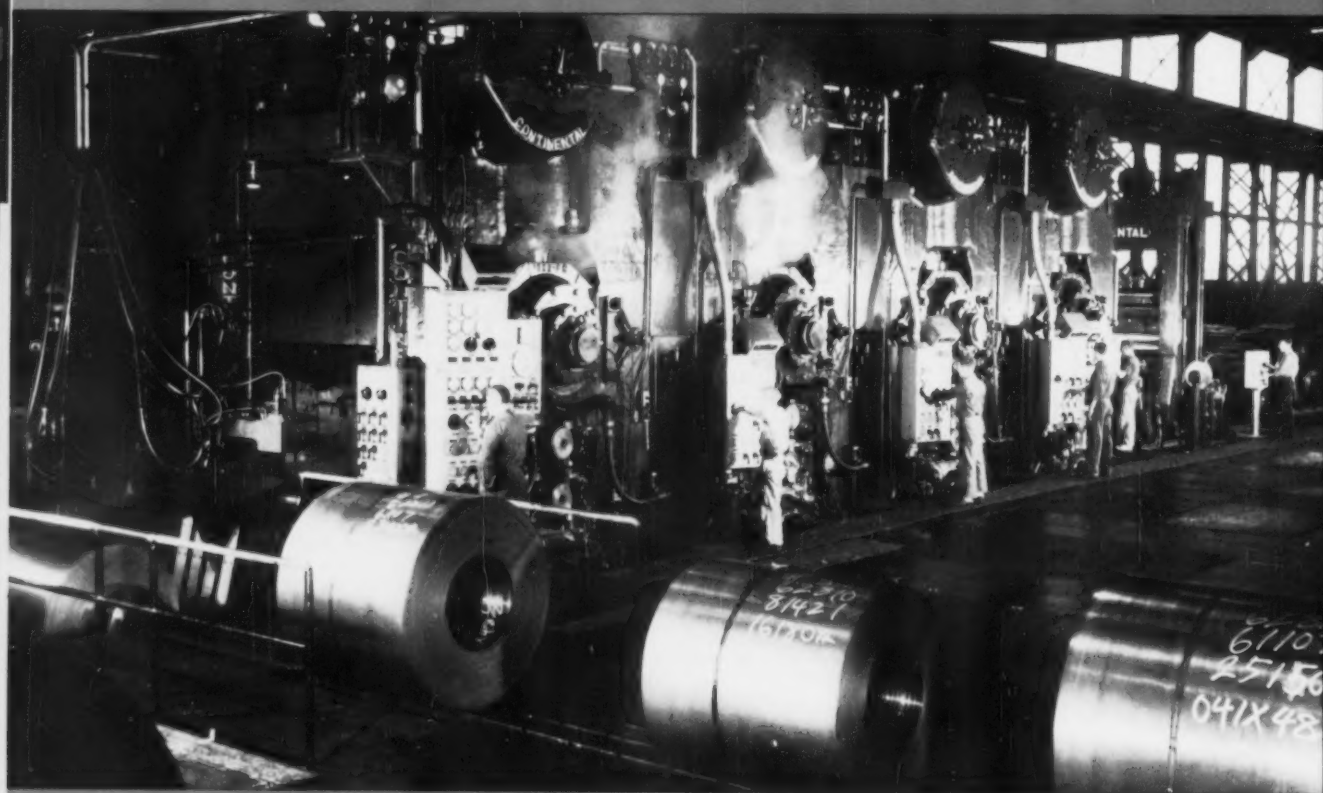
Grouped under the Blaw-Knox Foundry and Mill Machinery banner are the best known names in Metal Producing and Metalworking production equipment. These products, custom-designed and built for the highest standards of performance include: complete primary and finishing rolling mills, a comprehensive line of standard and special grade rolls, cold finishing equipment, castings for steelmaking, special high temperature alloy castings for heat treating and water cooled equipment for open hearth furnaces.

Behind each of these products is an engineering force and plant capacity that has no equal in industry. You can expect exceptional service from this integrated organization of machines and men who understand your production and market problems.





**BLOOMING MILL**—40-inch, 2-high reversing blooming-slabbing mill



**COLD MILL**—High-speed 21" x 53" x 60", 4-stand tandem cold mill

## Continental

In addition to complete mills for rolling all types of ferrous and non-ferrous metals, Blaw-Knox offers design, construction engineering, erecting and installation of the mill together

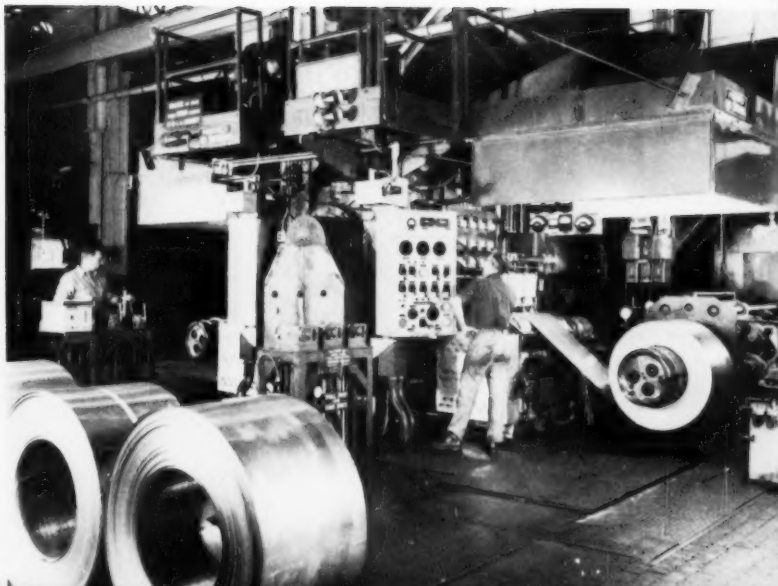
with auxiliary equipment and special machinery. Thus you are assured of a single responsibility from preliminary engineering to satisfactory installation.

Castings



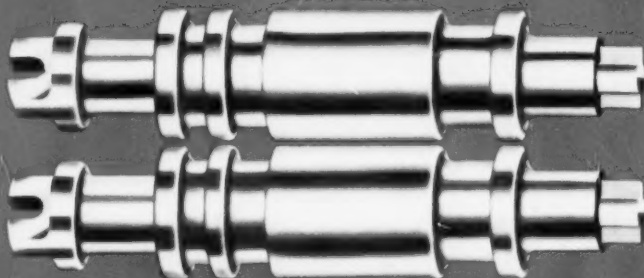
## Lewis

Lewis four-high reversing cold mills for rolling thin metals provide built-in versatility combined with continuous control and high speed delivery. Representative of the line, this four-high reversing unit for the cold reduction of strip aluminum and copper-base alloys.



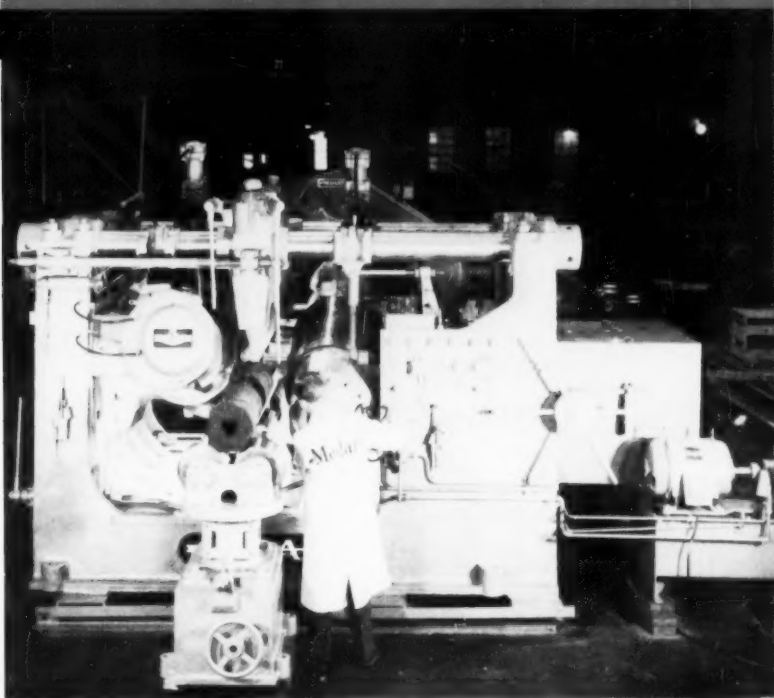
## Rolls

More than 50 different grades of iron and steel rolls are regularly available from Blaw-Knox. These rolls bear such well known trade names as Continental, Lewis and Pittsburgh. In addition, Blaw-Knox roll engineers can recommend special types of rolls best suited to your requirements.



## Medart

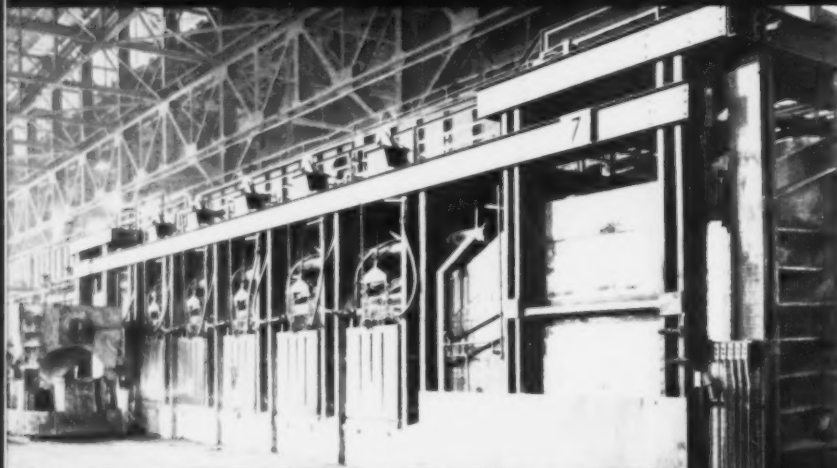
The most advanced and complete line of cold finishing equipment in industry. Shown here is one of the most widely used Medart machines, the 2-roll rotary straightening, sizing and polishing machine. To meet your special requirements, there's a Medart machine for billet peeling and chipping, sizing and polishing, centerless turning, straightening and roll grinding.





## Castings

Blaw-Knox castings are in service in practically every segment of American Industry. Under the famous trade names, Union and Continental, their quality reflects a program of constant improvement and the use of the most modern Foundry techniques. Blaw-Knox engineers are ready to study your designs in order to provide the best casting at the lowest practical cost.



## Steel Plant Equipment

Blaw-Knox water cooled equipment for use with high temperature furnaces provides a high degree of operational safety in rugged steel making operations. In addition, Blaw-Knox provides equipment such as dolomite machines, autopours, reversing valves and ladle addition feeders for use in mechanized steelmaking operations.



## National Alloy

The problems of heat and corrosion have been successfully overcome throughout the metals industry with the use of National Alloy castings. The advanced metallurgical skills and production facilities of National Alloy are directed to the single goal of providing high alloy castings for maximum service under the severe operating requirements imposed by elevated temperatures and corrosive conditions.



**BLAW-KNOX COMPANY**

300 Sixth Avenue  
Pittsburgh 22, Pennsylvania

# A picture of Modern Heat Treating Efficiency

LAMSON & SESSIONS are well aware of every modern type of heat treating equipment available, but chose AGF Reciprocating Furnaces because of the (1) clean hardening results (2) the uniformity of heat treatment (3) the versatility of the furnace and (4) its automatic operation.

## EVERYTHING IS THERE, WHEN YOU USE AGF AUTOMATIC FURNACES

The loader, automatic measured feed, controlled atmosphere, proper heating cycle, the automatic quench . . . even the automatic tempering oven is available to help you produce the highest quality heat treated product at lowest cost.

Inventors and original manufacturers of most basic types of heat treating furnaces used in product and parts manufacturing industries today, AGF "PIONEER" furnace builders are able to furnish the answers that will provide you with a "trouble-free" heat treating installation.

The latest production furnace, only recently introduced is the Model 240 illustrated above. Numerous complete installations have been made in plants wishing to "clean-up" and bring new efficiency to their heat treating departments. One such installation is that of Lamson & Sessions in Kent, Ohio, illustrated above.

Size doesn't matter because AGF has many standard sizes and models. There is one to suit your need, whether you heat treat 10 or 800 lbs. of work per hour. AGF builds a complete line of heat treating furnaces to suit the smallest or the largest industrial demands.

An AGF factory trained Engineer or Metallurgist will call on you and recommend proper equipment for your use at no obligation.

You'll get an honest recommendation from a fully qualified source backed by more than 78 years of reputable experience. Fill in and mail the coupon now.

MAIL COUPON — CUT OR TEAR ON RULED LINE



### American Gas Furnace Co.

1004 LAFAYETTE STREET, ELIZABETH N. J.



Please have your Engineer call ☐

Please send catalog ☐

My name \_\_\_\_\_

Title \_\_\_\_\_

My Company \_\_\_\_\_

Company Street No. \_\_\_\_\_

City \_\_\_\_\_

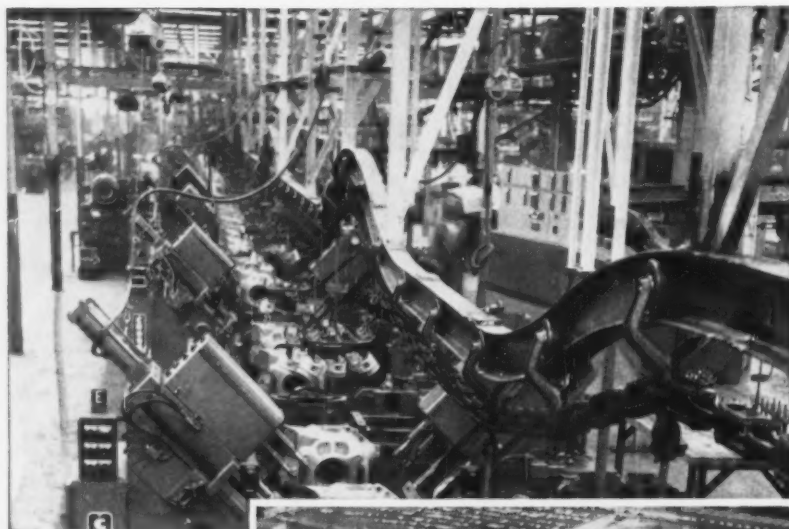
We want to heat treat \_\_\_\_\_

lbs. of \_\_\_\_\_

per hr.

☐ We are sending samples of our parts for your recommendation of proper heat treating equipment at no obligation.

# In the Spectacular PLYMOUTH ENGINE PLANT you see



(Above) View of Plymouth  
Engine assembly line



**VICKERS**<sup>®</sup>

**HYDRAULICS**

*Wherever  
You Look*

*Plymouth Engine Plant is 980' long and 500' wide. Indicative of its scope is crankshaft machining requiring 4500 linear feet of automation composed of 385 individual units. Plant capacity is 150 engines per hour.*

In the new Plymouth "Qualimatic" Engine plant you see Vickers Hydraulics on every side. Hundreds of machines in this latest and greatest example of automation are Vickers equipped.

Both builders and users of production equipment appreciate the significant advantages of Vickers Hydraulics . . . advantages that help produce better products at lower cost.

A specific need in the Engine Plant is standardization on a few basic hydraulic units to keep down parts inventories. The Vickers line makes standardization easy. Also desirable are hydraulics in units quickly demountable . . . so that by replacing units, repairs on the job are avoided and costly downtime reduced. Vickers has extensively developed demountable unit construction.

Whether automated or not, more and more plants have more and more Vickers Hydraulics. For further information, write for Catalog 5002B.

## VICKERS HYDRAULICS is used on machines supplied by these Companies to Plymouth Engine Plant

American Broach & Machine Co.	Lees-Bradner Company
Barnes Drill Company	Michigan Drill Head Co.
Bilt-Rite Tool & Machine Co.	Micromatic Hone Corporation
Buhr Machine Tool Company	Micro-Poise Engineering & Sales Co.
Colonial Broach & Machine Co.	Modern Industrial Engineering Co.
Crankshaft Machine Company	The Mott & Merryweather Machinery Co.
The Cross Company	Norton Company
Ex-Cell-O Corporation	A. P. Schraner Co.
Fitchburg Engineering Corp.	The Sheffield Corporation
Greenlee Bros. & Company	Snyder Tool & Engineering Co.
Industrial Metal Products	Sundstrand Machine Tool Co.
The LaPointe Machine Tool Co.	Jervis B. Webb Co.
Landis Tool Company	The Wickes Corp.
The R. K. LeBlond Machine Tool Co.	Wilson Automation Co.

## VICKERS INCORPORATED

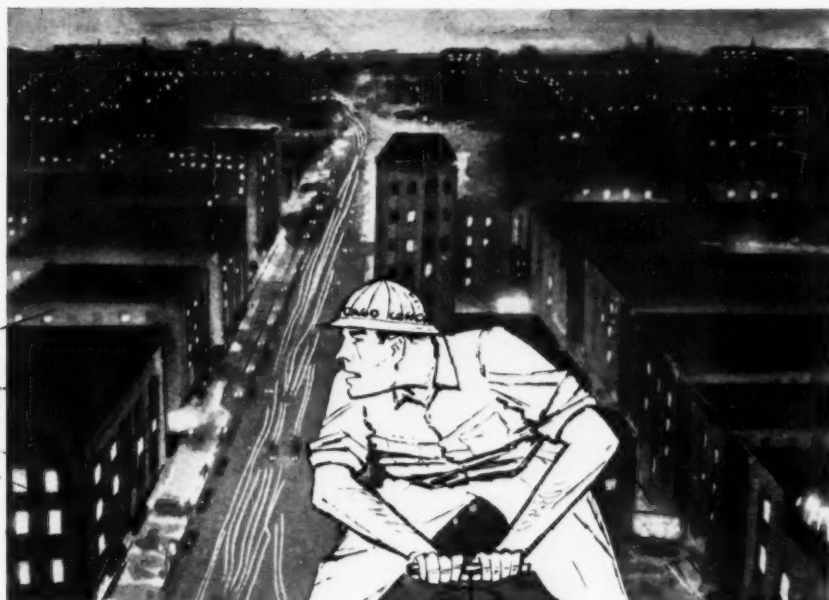
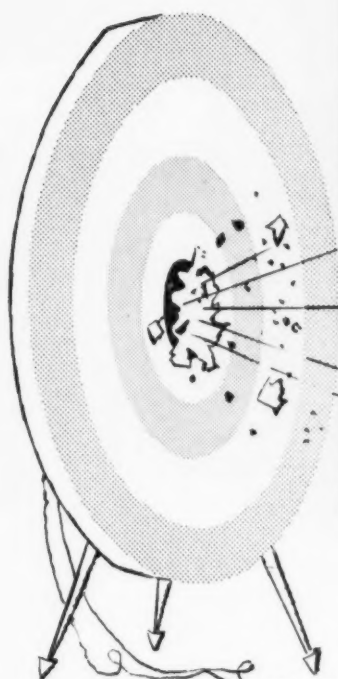
DIVISION OF SPERRY RAND CORPORATION

ADMINISTRATIVE and ENGINEERING CENTER  
Department 1420 • Detroit 22, Michigan

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI • CLEVELAND  
DETROIT • GRAND RAPIDS • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS  
NEW YORK AREA (Summit, N.J.) • PHILADELPHIA AREA (Media) • PITTSBURGH AREA  
(Mt. Lebanon) • PORTLAND, ORE. • ROCHESTER • ROCKFORD • SAN FRANCISCO  
AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA • WASHINGTON • WORCESTER  
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto 7545





# Controlled Blasting SAFE-GUARDS "light" FOR AN ENTIRE CITY

With better than an 80% increase in the consumption of electric power, the far-sighted engineers of a large mid-western electric power and light company decided that an addition to their main generator building was necessary. To do so meant first removing a 24" thick wall that measured 210' long by 31' high. Removing this wall in the formerly-conventional methods would not only have taken too long, but would have cost a great deal.

At this point CHICAGO CONCRETE BREAKING COMPANY'S demolition experts were called in. The question put to them: "Could dynamite be used safely on a wall that was less than five feet from operating equipment . . . equipment that meant power and light for an entire city?" The answer: CHICAGO CONCRETE BREAKING not only could guarantee to do the job of removing that wall, but would do so without disturbing the operation of that vital equipment.

In less than three weeks over 12,600 cubic feet of concrete wall was control-blasted out. A tremendous savings in time and at a cost that was but one-third of what the "old" methods would have been . . . with absolute safety to both men and equipment . . . such were the dividends that CHICAGO CONCRETE BREAKING returned to those modern-minded engineers.

If you have any rehabilitation work coming up — regardless of how complex or "tricky" it appears, phone or write today. Our 35 years of experience, know-how and ability are at your command to handle your demolition work while safeguarding your vital equipment . . . as we did in the above situation.

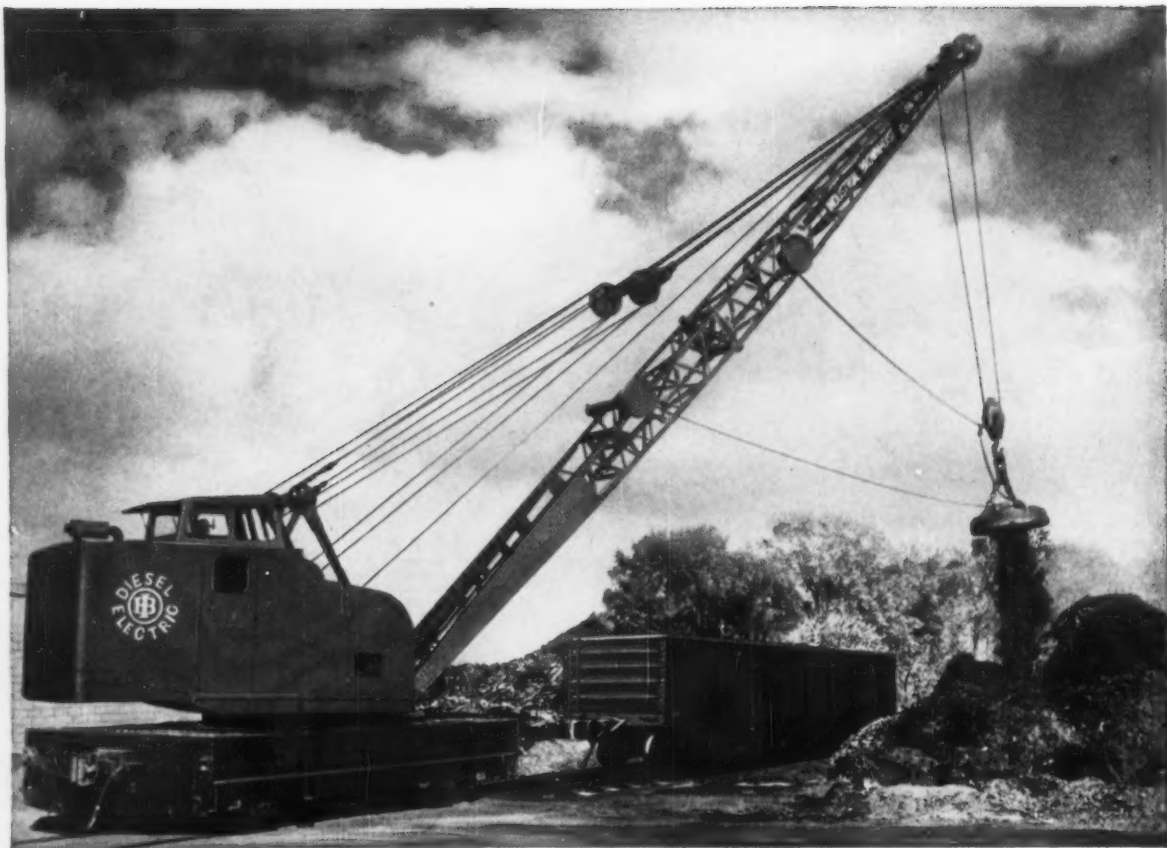
## CHICAGO CONCRETE BREAKING Co.

EDWARD GRAY, PRESIDENT

12233 S. AVENUE "O", Chicago 33, Ill., BAyport 1-8400

PITTSBURGH AREA - 213 Corey Ave., Braddock, Pa., Electric 1-1656

**SERVING THE PRIMARY METALS AND OIL INDUSTRIES WITH  
KNOW HOW, EQUIPMENT AND MANPOWER FOR 35 YEARS**



**With magnet  
hook or bucket...  
BROWNHOIST  
speeds the job**

Brownhoist Cranes are helping maintain high production schedules in mines, steel mills, factories, and scrap yards . . . in fact, wherever there are railroads throughout the world. Brownhoist Diesel-Electric Locomotive-Cranes, for all their husky size, handle easily. Their patented Monitor Type Cab and Clear-Vision Boom give a 360° view. Operating controls are within easy reach. Electric travel permits operation as a switch engine as well as a crane. Constructed to last for many years with little maintenance. Brownhoist Diesel-Electric Cranes are available in capacities from 25 to 100 tons. For complete information, consult your nearest Brownhoist representative or write us today.

181

# BROWNHOIST

BROWNHOIST MATERIALS  
HANDLING EQUIPMENT  
GIVES A LIFT TO  
AMERICAN INDUSTRY



SUBSIDIARY OF



**INDUSTRIAL BROWNHOIST CORPORATION**  
**BAY CITY, MICHIGAN** DISTRICT OFFICES: New York,  
Washington, Pittsburgh, Cleveland, Chicago, Denver, San Francisco,  
Montreal • AGENCIES: Detroit, Birmingham, Houston

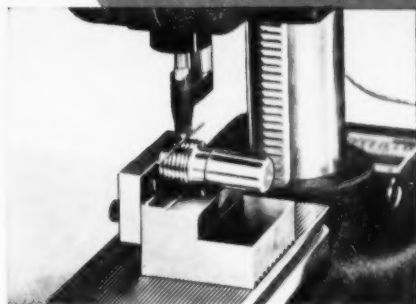
Use a  
**SHEFFIELD**  
**VISUAL GAGE**  
**FOR 10 DAYS**  
**... FREE**



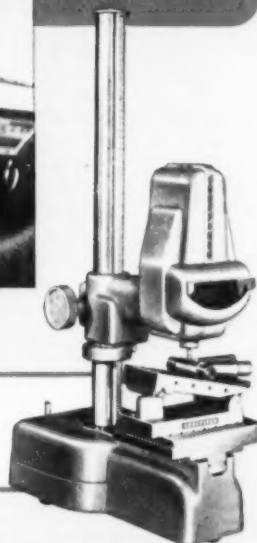
The Visual Gage being  
 used to check O.D.



The Visual Gage in the toolroom.



Measuring the pitch diameter  
 of tapered threads.



Using the sine bar  
 fixture to check taper.



7322  
**SHEFFIELD**  
 manufacture and measurement for mankind

Prove to yourself the real value of the Visual Gage right there in your own shop. You won't be obligated in any way.

See how simple it is—how fast—how sensitive—how positive—how rugged—and how easy to read.

See how many ways you can apply it to the precision work you are doing in the toolroom and in the shop.

The Visual Gage will with suitable accessories readily check angularity and any outside dimension including screw thread characteristics.

If you are working to "Tenths", ask for a Visual Gage having an amplification of 1000 to 1. If your tolerances are as small as ten millionths, ask for an amplification of 10,000 to 1. You have a choice of 5 amplifications.

**THE SHEFFIELD CORPORATION**

Box 893—Dayton 1, Ohio

Date \_\_\_\_\_

Without obligation, we'd like to try a VISUAL GAGE in our shop.

Name \_\_\_\_\_

Dept. \_\_\_\_\_ Position \_\_\_\_\_

Company \_\_\_\_\_

St. Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

# U.S.I. CHEMICAL NEWS

A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries

## Greenleaf to Handle Market Development of Zirconium And Titanium for U.S.I.



William C. Greenleaf has been named Manager of Metals Development for U.S.I. and will be responsible for market development and sales of zirconium and titanium sponge, to be produced from U.S.I.'s two new plants now being built in Ashtabula, Ohio.

A recognized authority in the field of zirconium and titanium, Mr. Greenleaf presented three papers during the 1955 Atomic Industrial Forum Zirconium Program, describing (1) melting of zirconium, (2) fabrication of zirconium, and (3) zirconium mill products and prices. He also conceived and developed processes now in general use for producing both wide-sheet and flat-bar titanium and zirconium by continuous strip-mill techniques.

## Faye Named Manager of Sodium Product Sales

Martin Faye has been named Manager of Sodium Product Sales for U.S.I. and will be responsible for coordinating sales and sales promotional activities for metallic sodium, "U.S.I. Isosebacic" acid and related products.

Mr. Faye joined the U.S.I.-National Distillers organization in 1952 in the Market Research and Development Department.



### TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing the Editor, U.S.I. Chemical News.

A zirconium-copper alloy now available is reported to combine high electrical conductivity with good strength retention at elevated temperatures. Suggested for electrical motor commutators serving above 500°F where strength is needed. Conductivity is 95.8% of copper. No. 1193

Titanium wire cloth is now on the market in sizes from 60 mesh to coarser grades. It is reported to be particularly suitable for filtering or screening highly corrosive materials. No. 1197

## Zirconium and Titanium Lick Roughest Corrosion Problems

Metals to be Available at Lower Cost in Future;  
Provide Long-Lived Materials of Construction;  
Complement Each Other on Corrosion Resistance

It is now practical to fabricate equipment which is *corrosion-resistant to almost every substance encountered in industry*, by using either zirconium or titanium metal. Alloys of either metal, or possibly both, may extend the range even further.

Industrial applications of these metals have been hampered by two considerations: availability and price. Zirconium will shortly be produced at a rate sufficient to supply industrial needs, and titanium has been available to industry during the past two years. And it is expected that increased production of these metals during the next few years will result in significant price decreases.

Twelve to thirteen thousand tons of titanium were available in 1956 and present construction schedules indicate that the figure will rise substantially in 1957. U.S.I.'s new plant alone will add 5,000 tons to the annual production capacity by the end of the year.

Zirconium will be on the market in quantity by mid-1957. When its new plant at Ashtabula, Ohio gets under way, U.S.I. will be able to supply 500,000 pounds or more per year to commercial users in addition to its Atomic Energy Commission commitments of 1,000,000 pounds per year.

### New Metals Economical

Chemical process equipment can now be fabricated from titanium for a little over twice the price of stainless steel, and it is expected that in the future titanium equipment will be only 50-75% higher than stainless. Commercial grade zirconium equipment will probably be priced only 75-100% higher than stainless when volume production is reached.

### Typical Corrosion Resistances\* of Zirconium and Titanium

Corrosive Media	Metal Resistance	
	Zirconium	Titanium
Sulfuric Acid	excellent to good below 80%	good below 5%
Nitric Acid	excellent	excellent
Hydrochloric Acid	excellent	good below 10%
Phosphoric Acid	excellent to fair below 85%	poor
Chromic Acid	excellent	excellent to good
Aqua Regia	poor	excellent
Wet Chlorine Gas	poor	excellent
Chlorine Water	excellent	excellent
Sodium Hydroxide	good below 5%	good below 50%
Ferric Chloride	poor	excellent
Calcium Chloride	excellent	excellent
Cupric Chloride	poor	excellent
Sodium Chloride	excellent	excellent
Ammonium Chloride	excellent	excellent
Aluminum Chloride	excellent	excellent to fair

\*Above data do not cover all conditions because of space limitations. Literature references may be obtained by writing the Editor, U.S.I. Chemical News, 99 Park Ave., N. Y. 16, N. Y.



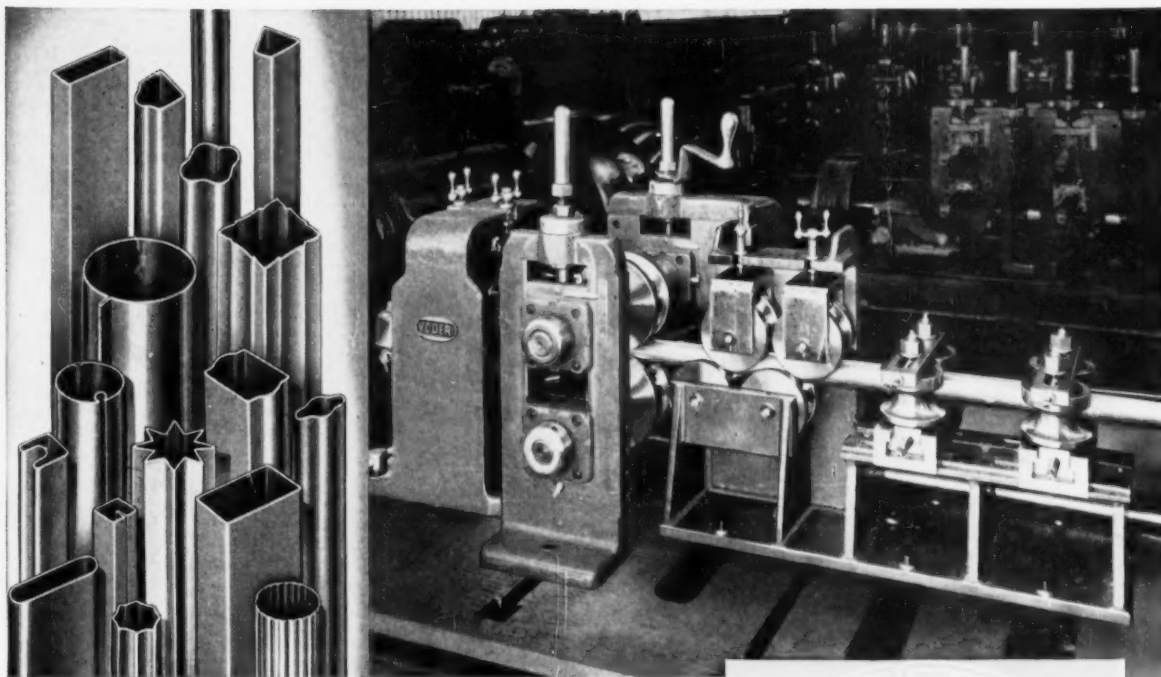
**INDUSTRIAL CHEMICALS CO.**

Division of National Distillers Products Corporation  
99 Park Avenue, New York 16, N. Y.

### U.S.I. SALES OFFICES

Atlanta • Baltimore • Boston • Buffalo • Chicago • Cincinnati  
Cleveland • Dallas • Detroit • Houston • Indianapolis • Kansas City, Mo.  
Los Angeles • Louisville • Minneapolis • Nashville • New Orleans  
New York • Philadelphia • Pittsburgh • Portland, Ore. • St. Louis  
Salt Lake City • San Francisco • Seattle





*Lock-Seaming attachment at exit end of forming machine.*

## COLD ROLL FORMING TUBULAR SHAPES

Among the wide variety of things you can make on a Yoder Cold Roll Forming machine are round, square, oval, rectangular and other tubular shapes, such as illustrated at left above. The seams may be open, lapped, butted, dovetailed, interlocking, etc.—as indicated in Figures 1 to 6 at the right.

Millions of feet of such unwelded tubular shapes are made from coiled strip for conductor pipe, bedsteads, lamp stands, window channel, wiring raceways, carrying rods, etc. Production ranges from 20,000 to 50,000 feet per day, with only one operator and a helper.

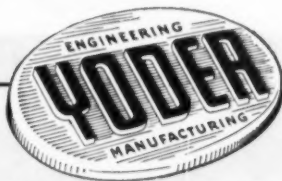
Yoder offers you the cooperation of their engineering staff for designing and adapting their cold roll forming machines, auxiliaries, and tooling, for the low cost production of structurals, mouldings and trim, panels, tubular and other shapes, to meet individual needs.

The Yoder book on Cold Roll Forming is a complete, illustrated text on the art and the equipment needed for performing a variety of operations which can be combined with cold roll forming, at little or no extra labor cost. A copy is yours for the asking.

### THE YODER COMPANY

5510 Walworth Avenue

Cleveland 2, Ohio



**COLD ROLL FORMING MACHINES**  
**ROTARY SLITTING LINES**  
**PIPE AND TUBE MILLS—Electric Weld**

## WHAT UNBIASED RECOMMENDATIONS MEAN TO YOU

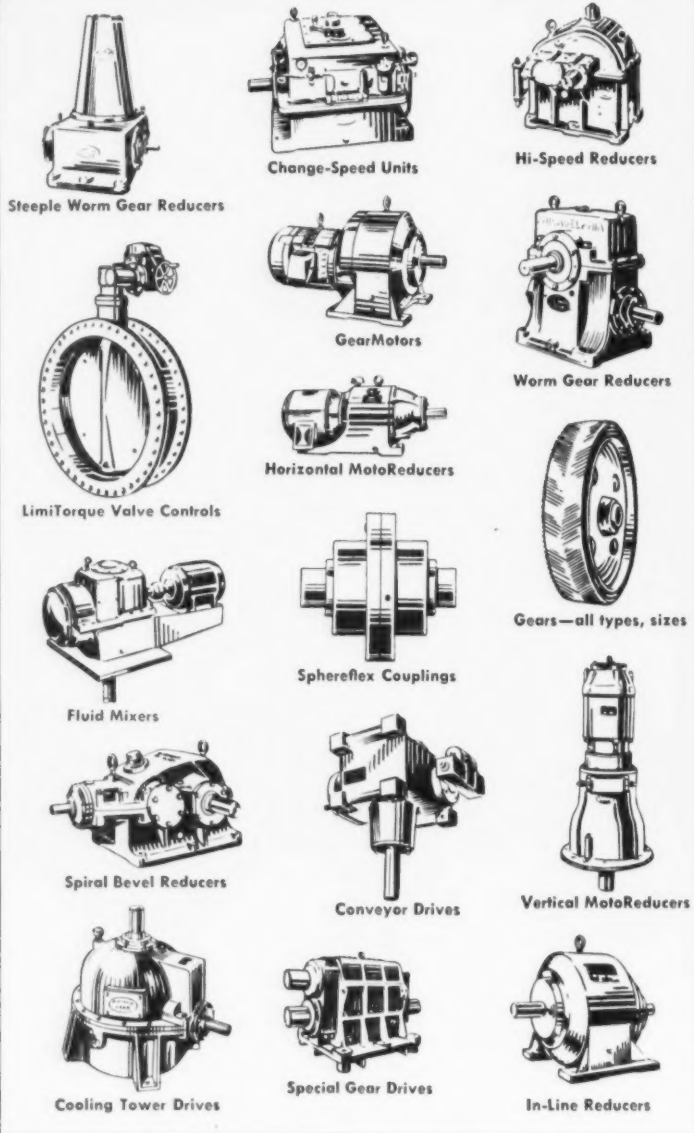
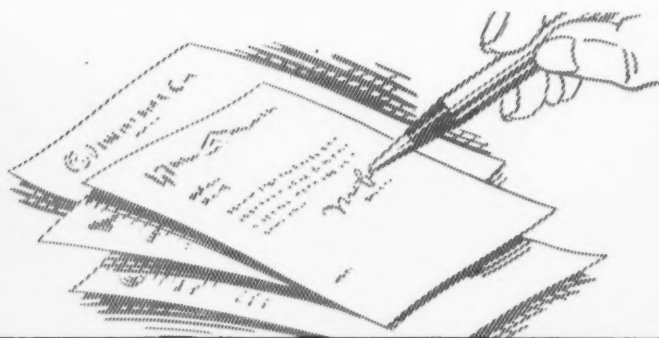
Because we make *every type and size* of Gear Driven Power Transmission Unit, we can recommend a *specific unit* for your particular requirements, which is exactly the *right type and size* to give you the most efficient service and longest possible life . . . Our recommendations are completely "unbiased", because we do not have to limit them to just one or two types. We have also found that many firms like to order their Units from *one manufacturer*—and to make that one manufacturer responsible for the selection and operation of all their Reducers.

Whatever your drive problem may be, whether speed reducing, speed increasing, motorized operation of valves, fluid mixing, or the coupling together of driving and driven units—it will pay you to call upon "Phillie Gear" Engineers.

Upon request on your Business Letterhead, we shall be glad to send you a copy of our "All Products Bulletin", or a complete Catalog on any type of Unit illustrated herewith.



Member of the American Gear  
Manufacturers Assn.



# phillie gear<sup>®</sup>

PHILADELPHIA GEAR WORKS, INC.  
ERIE AVE. & G STREET, PHILADELPHIA 34, PENNA.  
Offices in all Principal Cities

INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS  
Virginia Gear & Machine Corp. • Lynchburg, Va.



## WEAN CONTINUOUS STRIP ANNEALING LINES



**WHEN**  
*Experience*  
**COUNTS**

*Two of five Wean Continuous Strip Annealing Lines installed in a Pittsburgh district mill.*

### ***Ninth Wean Engineered Line Sets New Record***

The ninth Wean designed continuous strip annealing line for silicon and tinplate products is now in the process of construction. This means that Wean has engineered more of these lines than all other firms combined — a record in every sense of the word.

The reasons for this Wean leadership are many.

For example, the Wean design permits maximum speed and production while providing an excellent bright annealed product of uniform surface. And, users of Wean continuous lines report better metallurgical control, better temper mill operation with elimination of stickers, better delivery and a reduction in process inventory.

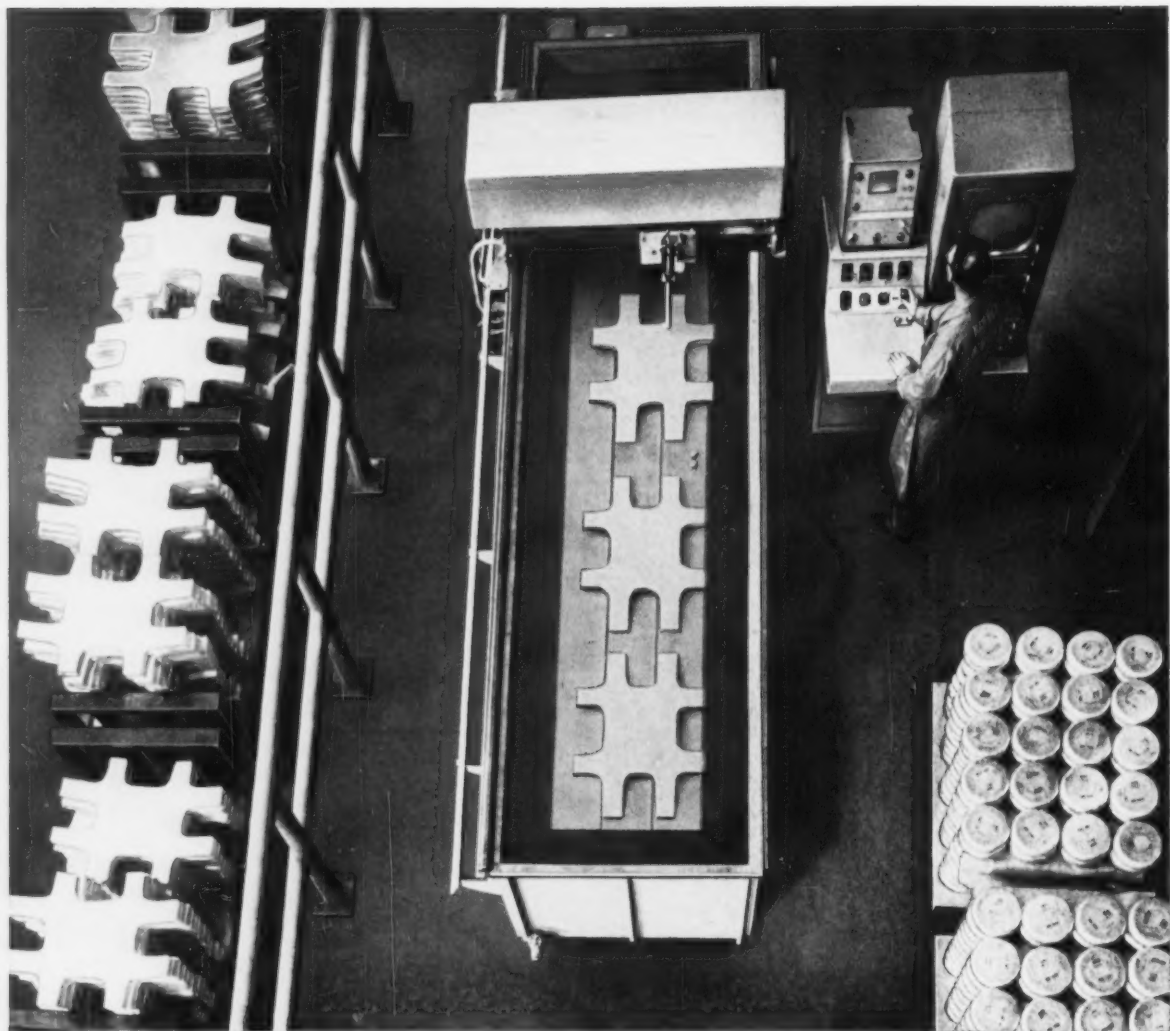
★ Wean also has designed and built 11 Stainless Steel Continuous Annealing Lines — also a record in the industry.

THE



**WEAN**

ENGINEERING COMPANY, INC. WARREN, OHIO



## Harvey hand forgings...100% ultrasonic tested

**OPTIMUM QUALITY GUARANTEED** regardless of the size or shape you order from Harvey Aluminum. Huge hydraulic forging presses ranging in size to 8000 ton capacity now make it possible to deliver unusually large hand forgings. All shapes, from simple biscuit to complex smith forging, can be produced in aluminum or titanium alloys. And using the immersion technique illustrated, every forging is ultrasonic tested on the newest automatic equipment to verify internal soundness of the material.

**MOST ADVANCED TESTING METHODS** automatically guarantee uniform high quality...insure freedom from internal and external discontinuities. Ultrasonic testing equipment is just one of many methods that safeguard Harvey quality from ingot to finished forging. No matter what your design and production requirements are in forgings, or in extrusions or impact extrusions, you can rely on the Harvey tradition of highest quality. Review your hand forging requirements with your Harvey engineer.

*Harvey is a leading independent producer of quality aluminum products in all alloys and sizes; Rod and bar, pipe, tube, hollow sections, press forgings, forging stock, impact extrusions, structurals, special shapes, extrusions, screw machine products and other aluminum products. Harvey is also producing similar items in titanium and steel.*

Making the most of aluminum  
... for everyone

**HARVEY**  
Aluminum

HARVEY ALUMINUM SALES, INC.  
TORRANCE, CALIFORNIA  
Branches in principal cities



# An Even Better ***DIMENSIONAIR***

WITH THE SAME BASIC, NO-DRIFT SYSTEM

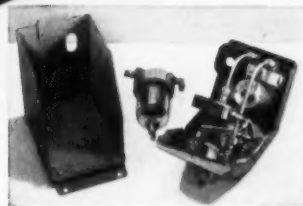


**ONLY AIR GAGE WITH  
BUILT-IN ACCURACY  
THAT ENABLES USE  
OF ONE MASTER**



**BETTER FILTER with  
TRANSPARENT BOWL**

New sintered bronze element filters out dirt and coagulated oil. Condition of air lines can be readily checked by observing filter bowl. Attached directly to gage, it eliminates extra piping.



**ALL COMPONENTS  
EASILY ACCESSIBLE**

One-piece top and front easily removed with all components and connections attached. Quick, easy servicing, if necessary.

The Dimensionair system is basically sound in principle. Its accuracy is proved constant and dependable every day in practice.

Now, new important refinements have been built into the Dimensionair which further improve its use.

Most air lines installed in plants were NEVER INTENDED to be used for precision instruments of any kind. Hence, the Dimensionair is now made EVEN MORE IMMUNE to unclean air and variations in air pressures.

Adjustments are more foolproof.

Smaller size makes the gage EASIER TO HANDLE and increases its adaptability for general use . . . and for multiple use.

Since any instrument is subject to all degrees of treatment it must be EASY TO SERVICE when the unusual or unexpected upsets its normal function. In the new and smaller Dimensionair all components and connections are quickly and easily accessible.

In every way the Dimensionair provides you with constant accuracy and GREATER DEPENDABILITY, adaptability and service. That's why more and more inspection people buy it. Why don't YOU try it? Write or call us or our nearest office.

**FEDERAL PRODUCTS CORPORATION**  
7131 Eddy Street, Providence 1, R. I.

**FEDERAL'S SOLUTION TO  
THE COST OF GAGING:**  
Impartial Gage Selection  
Engineering Follow-Through  
Everything in Gages

Ask **FEDERAL** First

FOR RECOMMENDATIONS IN MODERN GAGES . . .

Dial Indicating, Air, Electric, or Electronic — for Inspecting, Measuring, Sorting, or Automation Gaging

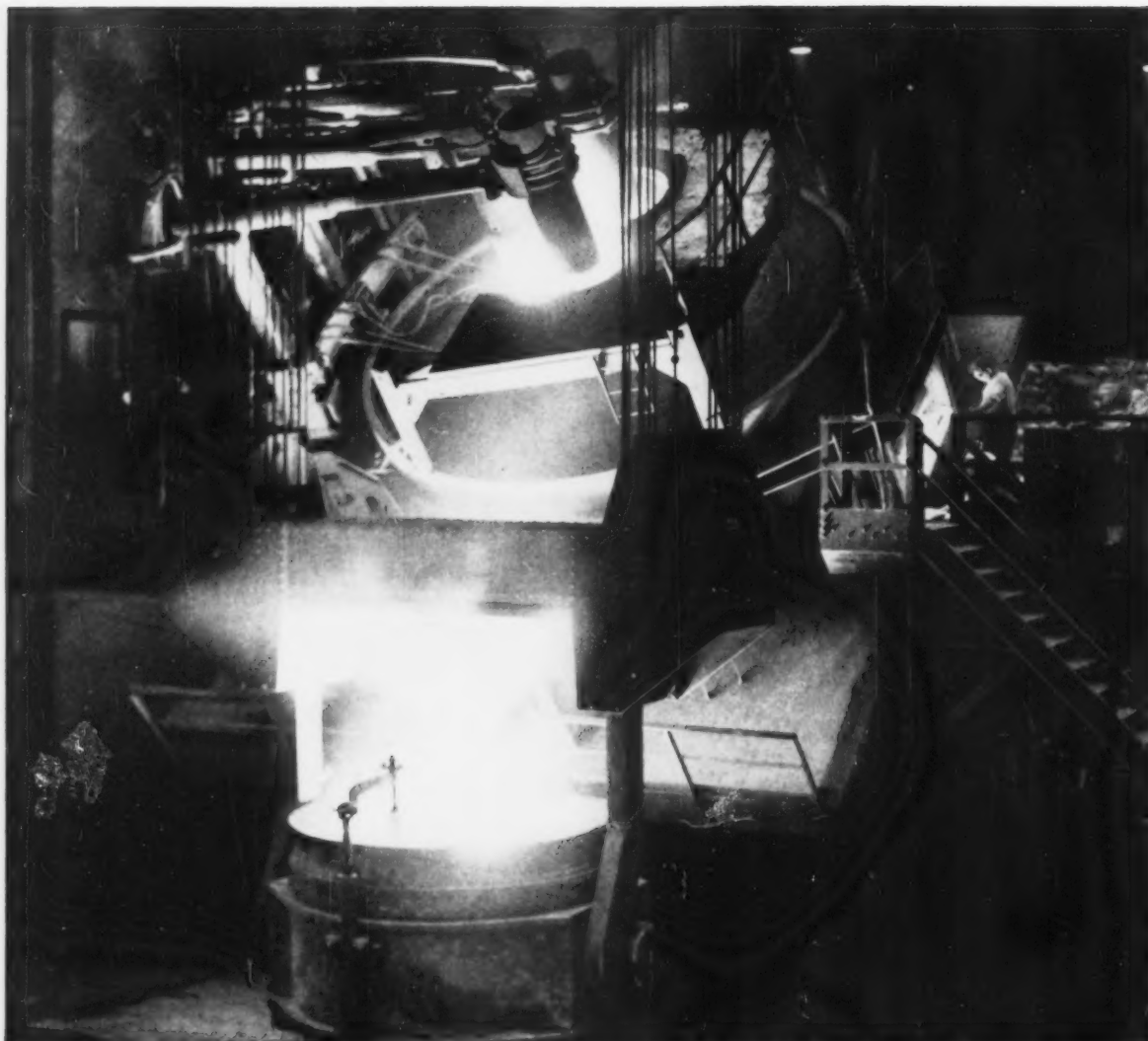


Photo courtesy of American Bridge Division of the United States Steel Corporation

## BAKER'S MAGDOLITE AND JEBCOLITE are always 5 ways better

Continued research and development throughout the years, plus The J. E. Baker Company's precisely controlled manufacturing methods, have resulted in the superior, properly burned, grain-sized Magdolite and Jebcolite particles which help provide:

More uniform ingots—increased ingot production—increased furnace efficiency—lower

refractory costs—less defective production material.

Magdolite and Jebcolite\* are the *original* dead-burned dolomites that offer better composition, preparation, strength, economy and quality. Don't say "dolomite." Save dollars. Specify Baker's Magdolite for open hearth and Jebcolite for electric furnace use.

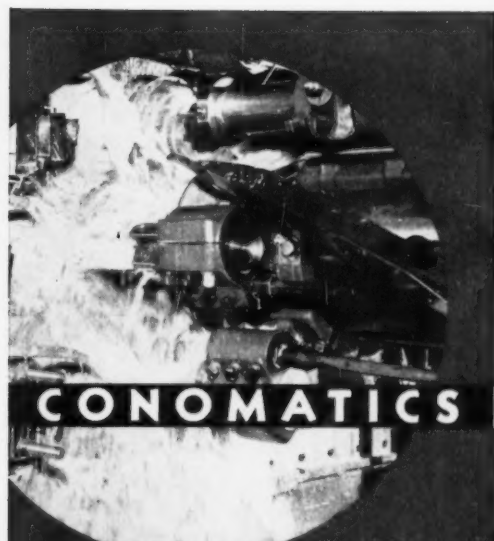
*\*Jebcolite has the same superior chemical, physical and mineralogical characteristics as Magdolite and differs only in grain size which is designed specifically for electric furnace application.*



### THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA


PLANTS: BILLMEYER, YORK, PENNSYLVANIA — MILLERSVILLE, OHIO




**CONOMATICS**

*61 models*


CONE AUTOMATIC MACHINE COMPANY, INC.  
WINDSOR, VERMONT, U. S. A.  
MULTI-SPINDLE AUTOMATIC LATHES




1-Spindle 3 sizes  
2 1/2" thru 3"




4-Spindle 11 sizes  
16" thru 24"




4-Spindle Non-Indexing  
7 sizes — 1" thru 3"



6-Spindle 10 sizes  
12" thru 48"



8-Spindle 6 sizes  
11 1/2" thru 30"



6-Spindle & 8-Spindle  
4 sizes — 1 1/2" thru 6"

*61 models*

A machine not put to its best use is theoretically idle. Proper machine selection is an important factor in the profitable use of a multiple spindle automatic. So extensive are the demands on this type of lathe that no single model—or number of models—can be expected to efficiently handle the wide range of work available.

To excel in any range of work a multiple spindle automatic must be specifically designed for that range. That is why CONOMATICS are provided in so many models. In no other way can the purchaser be assured of the best possible machine for his particular requirements.

*Write for your copy Today*



**Conomatic**

CONE AUTOMATIC MACHINE COMPANY, INC., WINDSOR, VT., U. S. A.

1887-1957  
 MARKING  
 THE 70th  
 CHAPTER  
 IN THE  
**MILNE**  
 STORY  
 Of Service  
 To  
 Metalworking

America's  
 Leading  
 Tool Steel  
 Specialists

**A. MILNE & CO., INC.**  
 ESTABLISHED 1887 INCORPORATED 1957  
 STEEL AND IRON MERCHANTS

BELL SYSTEM TELETYPEWRITER  
 NEW YORK 1-148  
 WESTERN UNION ADDRESS  
 WUX 824

OFFICE AND WAREHOUSE  
 741-3-5 WASHINGTON STREET  
 NEW YORK 14, N. Y.  
 TELEPHONE WATRINS 4-3830

CABLE ADDRESS CARD TABLE  
 ALL AGREEMENTS SUBJECT TO  
 STRIKES, ACCIDENTS OR OTHER  
 CAUSES BEYOND OUR CONTROL

The Metalworking Industry  
 U.S.A. and Canada  
 Gentlemen:

THIS PAGE IS THE BEGINNING  
 OF A NEW CHAPTER IN MILNE'S PROGRESS.  
 It begins with this new letterhead.  
 As of January 1, 1957 A. Milne & Co. became  
 A. Milne & Co., Inc.

This change is an indication and a symbol  
 of our continuing growth and expanding service.  
 When Mr. Alexander Milne and Mr. Little founded  
 the firm in 1887, offices were located in New York  
 and Boston. Today, we can say that wherever  
 you are in industrial U. S. A., a Milne man and  
 a Milne warehouse are near you.

We wish to thank all our customers  
 for making this growth possible and assure them of  
 the utmost cooperation from A. Milne & Co., Inc.  
 in the next 70 years.

Sincerely,

*A. Milne & Co., Inc.*

**MILNE & CO. INC.**  
 Established 1887  
 745 WASHINGTON ST. NEW YORK 14, N. Y.  
 America's Leading Tool Steel Specialists  
 Complete Line Of Tool Steels—Hollow and Solid

WAREHOUSES: New York • Chicago • Boston • Pittsburgh • San Francisco • Cleveland  
 Philadelphia • Detroit • Dayton • Atlanta • New Britain, Conn. • St. Louis  
 SALES OFFICES: Rochester • Louisville • Worcester • Milwaukee • Madeira Beach,  
 Florida • Phoenix • Indianapolis • Charlotte  
 SALES AGENTS: Los Angeles • Portland, O. • Fort Worth • Denver • Montreal

AM 3



# NOW...

## QUALITY WELDS like these...

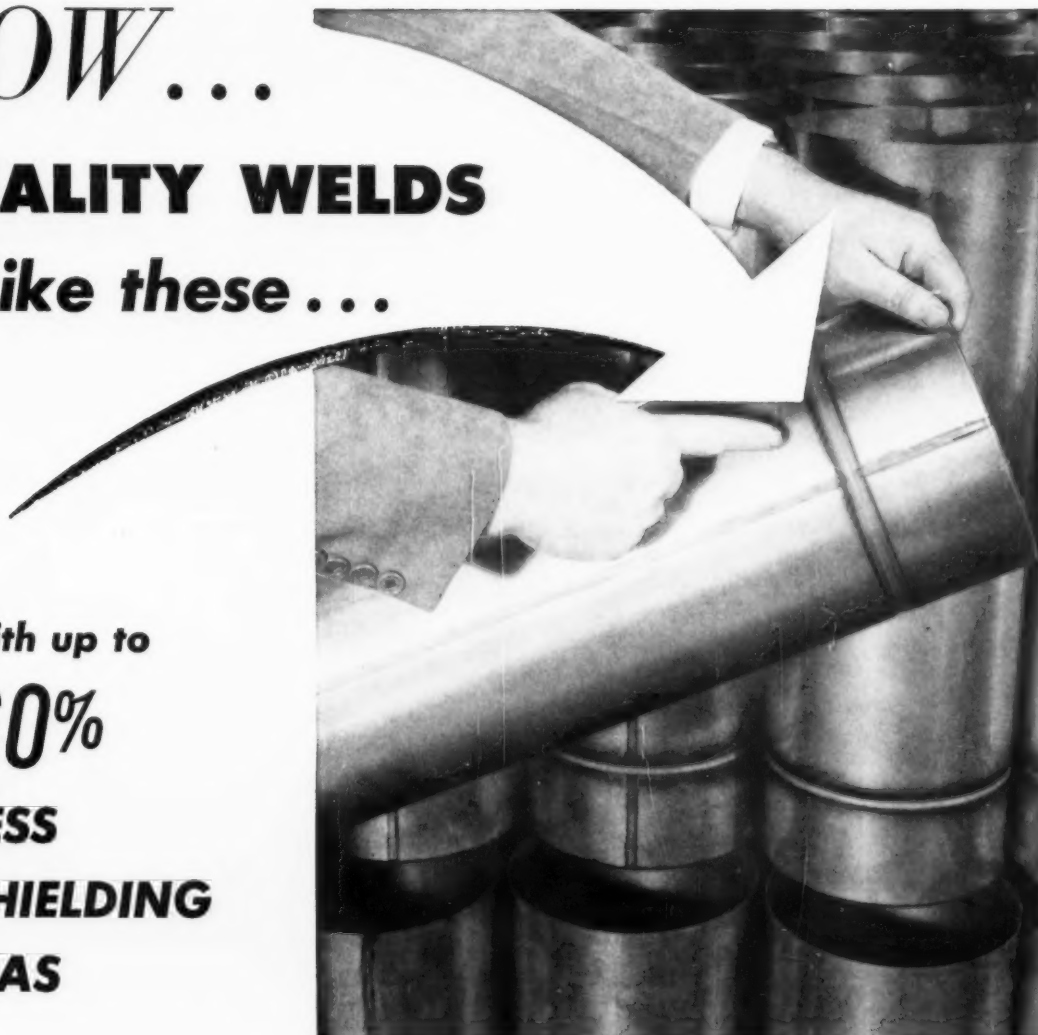
with up to

# 60%

**LESS**

**SHIELDING**

**GAS**



*H-15 argon-hydrogen mixture means new economy in fast, sound welding operations.*

Using H-15, a LINDE mixture of argon and hydrogen shielding gases, savings as high as 60% of normal gas consumptions are being attained by manufacturers on a wide variety of metal products. This mixture is designed for extremely efficient mechanized welding of stainless steel, Monel, Inconel, and cupro-nickel.

**COMBINES ADVANTAGES**—H-15 mixture combines the high welding speed feature of Helium with the low consumption advantages of argon—result, the lowest cost, high-quality welding yet attained . . . And no extra equipment is needed for a change over to H-15.

Get the complete story of this highly efficient, economical mixture, contact your local LINDE representative. Start saving now—do it today.

### **Linde Air Products Company**

**A Division of Union Carbide and Carbon Corporation**

30 East 42nd Street  New York 17, N. Y.

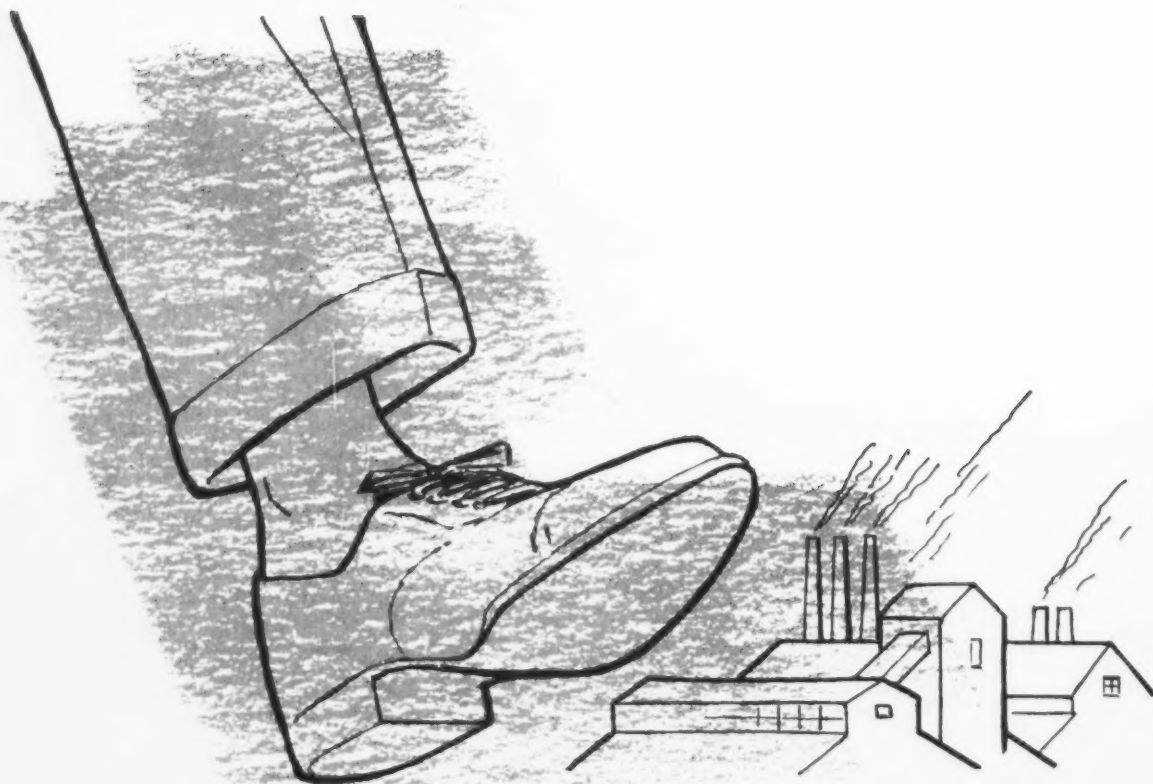
Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY

Division of Union Carbide Canada Limited, Toronto

*The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.*





## **a step ahead...of the changing time**

is facilitated by the production of high-grade ores, the maintenance of a fine ore vessel transportation fleet, modern mining equipment, and the employment of skilled employees. This "team work" keeps industry and commerce ahead of the times, thus insuring further development on a greater scale than ever before in history.



**IRON ORE ★ ALLOYS ★ VESSEL TRANSPORTATION ★ COAL**

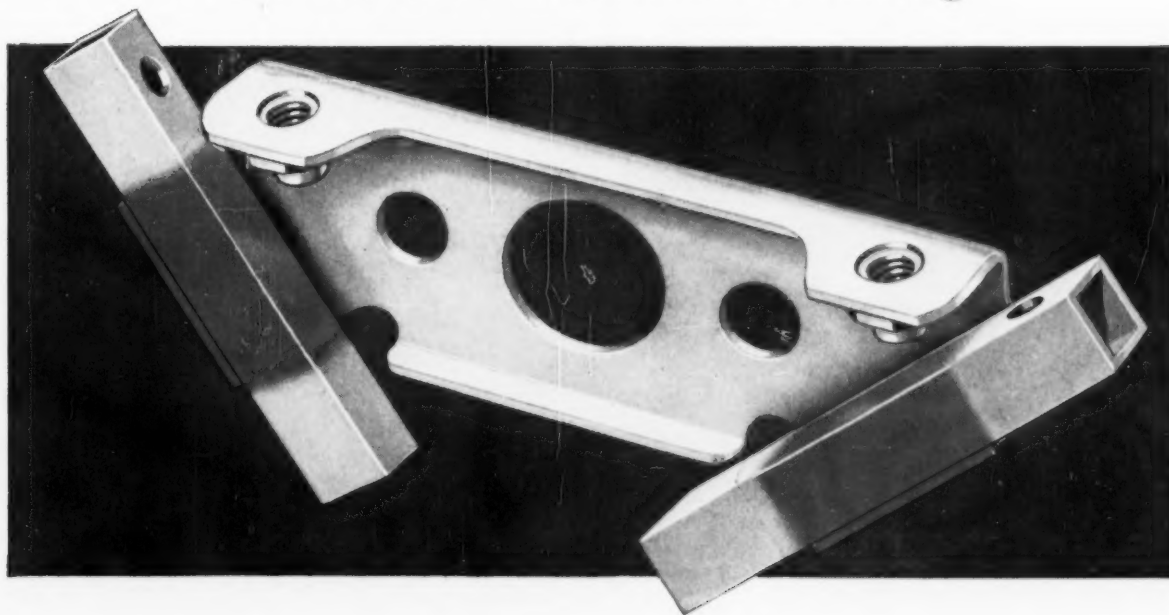
*The Cleveland-Cliffs Iron Company*

**UNION COMMERCE BUILDING • CLEVELAND 14, OHIO**



# Jack & Heintz Saves \$15<sup>84</sup> Per Hour...

with **TOCCO**\* Induction Brazing



**Brazing Costs Down**—When Jack & Heintz engineers switched from torch brazing to automatic induction, brazing cost of these inverter brush mounts fell from \$.05 to \$.006 each—a reduction of 83% in direct labor costs alone! Additional savings result because less cleaning is required after TOCCO, and fuel costs are much lower, too.

**Brazing Production Up**—While costs dropped, production on the part zoomed—from 40 to 360 brazed assemblies per hour. Furthermore, rejects and scrap, formerly high, are now negligible.

**Versatility**—The part shown is just one of over 25 parts, large and small, which alert J & H engineers have converted from old-fashioned brazing methods to modern, automatic TOCCO. Overall brazing costs (TOCCO brazing versus former methods used) are down 75%—brazing speed, up 100%.

If the manufacture of your product involves brazing, heat-treating, forging or melting of ferrous or non-ferrous metals, don't overlook TOCCO as a sound method of increasing production, improving product quality and slashing costs.



## TOCCO

THE OHIO CRANKSHAFT COMPANY

### Mail Coupon Today — NEW FREE Bulletin

The Ohio Crankshaft Co. • Dept. A-1, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Brazing and Soldering".

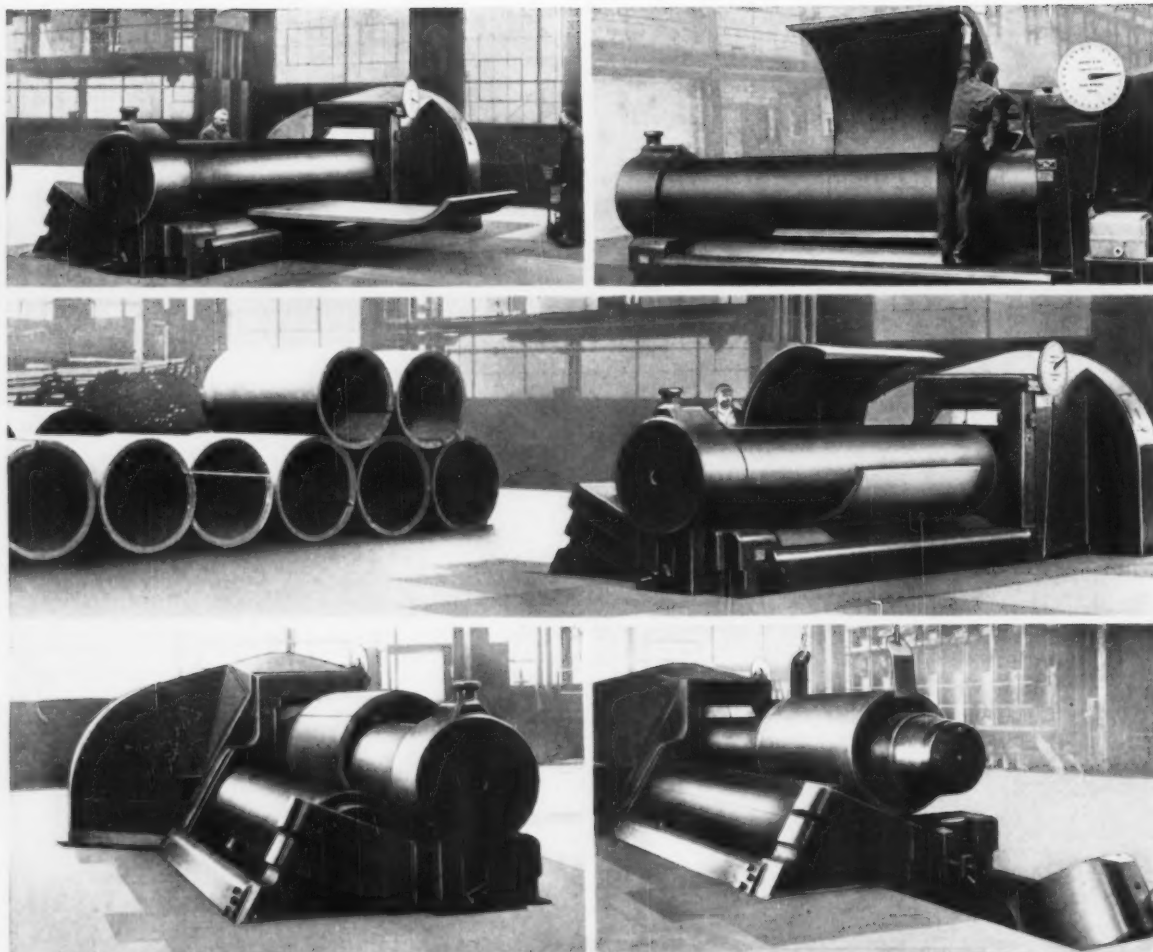
Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



# PLATE BENDING ROLLS INITIAL PINCH TYPE

Rolling A-212 Plates Cold  
3" Thick to 38" I.D.

## BERTSCH & COMPANY

CAMBRIDGE CITY

INDIANA

*Advertisers in the Iron Age since 1879*



# BRASS

**keeps sales up...  
manufacturing costs down**

## TURNER IS A LONG-TIME USER OF ANACONDA BRASS ROD AND TUBE— GIVES 10 REASONS WHY—

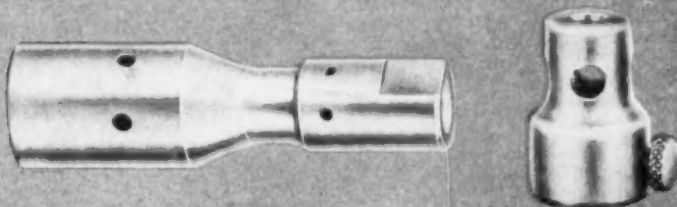
Blow torches built by The Turner Brass Works, Sycamore, Ill., have a reputation for dependable operation and long life. Since 1871, brass has been used consistently in their construction and has built a quality reputation for Turner. Turner prefers Anaconda Brass as a quality metal and looks to The American Brass Company as a quality source of supply.

8473

These are the reasons given:

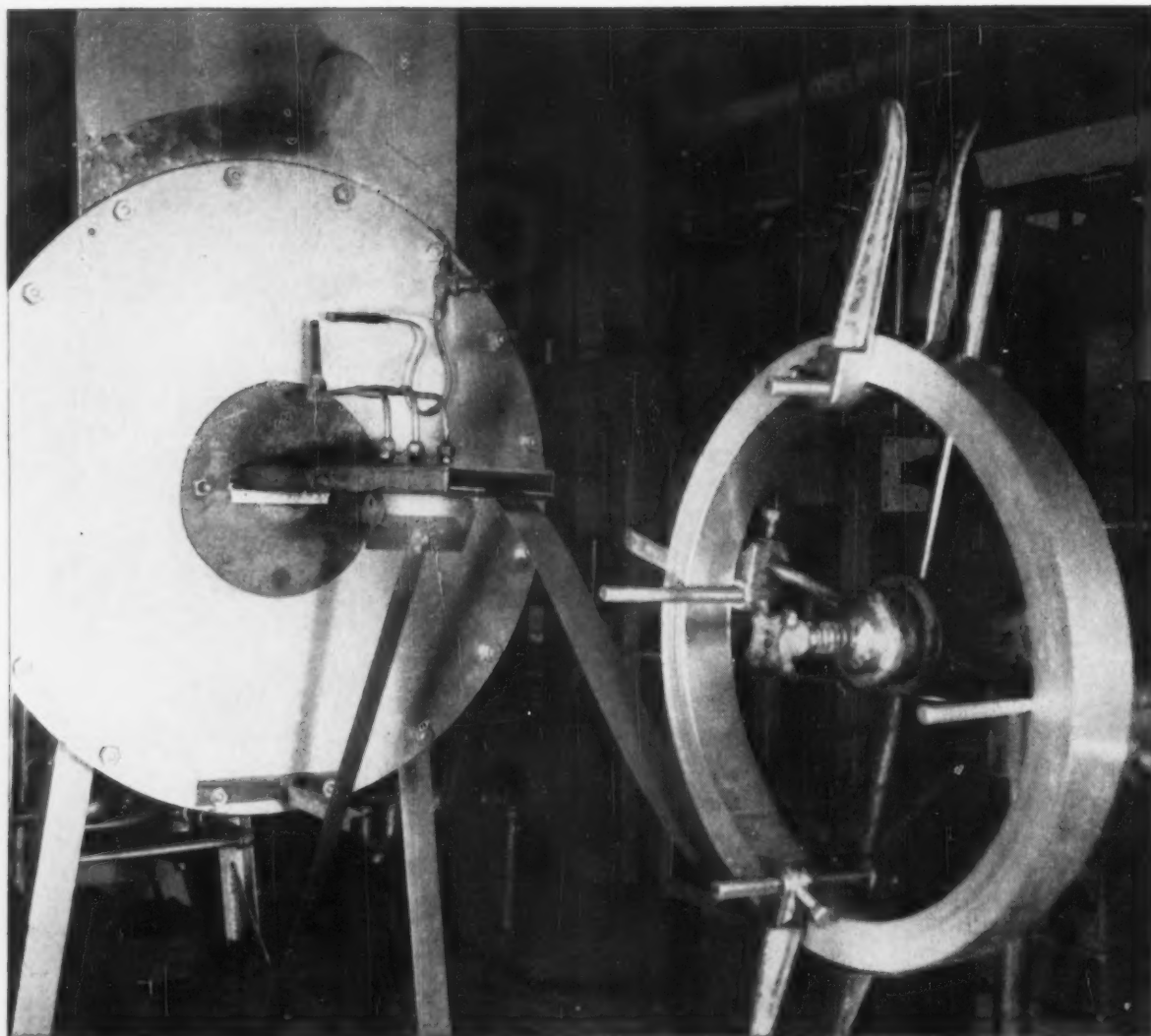
- ① Brass is the quality material needed for the service.
- ② Brass is easily machined at high speed, with less tool breakage—manufacturing costs are 15% lower than with other metals.
- ③ Close tolerances are easily held with brass.
- ④ Threading holds well—yet accessories are easily screwed on and off.
- ⑤ Brass takes a good finish—polishing is easy and economical.
- ⑥ Clean, polished brass products have proven high sales appeal.
- ⑦ Brass stands up under alternate heating and cooling.
- ⑧ Brass resists corrosion—the torches are used on land and sea, throughout the world.
- ⑨ Brass gives superior wear on valve seats.
- ⑩ Brass has high public acceptance as a quality material.

Turner liquefied petroleum torch No. LP-555, with disposable fuel tank. Below are accessories of brass—holder for soldering tip and a heavy-duty burner.



The American Brass Company, Waterbury 20, Conn.  
In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

**ANACONDA®**  
COPPER • BRASS • BRONZE



## ***GAS*** heat-treats metal parts in your precision *Hamilton* watch

Gas is used by the Hamilton Watch Company to heat-treat metal parts of its watches—down to the tiniest balance staffs. Gas-fired strip furnaces maintain a temperature of 2,000 degrees to temper the strip used in processing hairsprings and mainsprings of all Hamiltons. The hairspring of a watch is finer than a human hair—yet, due to modern metallurgy and heat-treating methods, this delicate piece of steel may last a lifetime.

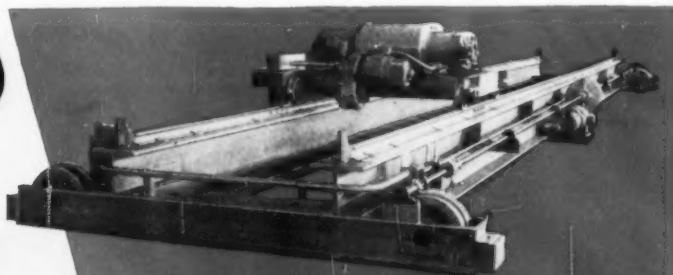
Gas is used in heat-treating processes at Hamilton

because it is clean, economical, and permits exact temperature control. Throughout industry Gas and modern Gas equipment provide the most satisfactory method of heat processing. For information on how Gas can help you in your production operations, call your Gas Company's industrial specialist. He'll be glad to discuss with you the economies and outstanding results you always get with Gas and modern Gas industrial equipment. *American Gas Association.*

# **EUCLID**

## **MATERIAL HANDLING EQUIPMENT**

Since 1910



Typical double girder general purpose crane composed of standard components. A wide variety of spans and capacities available with floor, cab or remote controls. Modified as desired to meet special requirements.

Euclid Cranes and Hoists are produced by specialists to render efficient service with minimum attention.

Their high quality is evidenced by a long list of discriminating purchasers and an impressive record of repeat orders.

Euclid Cranes are available in a large range of sizes and capacities. They include top running, underhung, single or double girder, motor driven or hand power, for all types of industry and service.

Trolleys are built with one or more hoists as required with any type of control. Top running, underhung, submerged or full revolving trolleys are available.

Special cranes are built to customers' specifications or to plans developed by our engineers.



Typical machine tool assembly cranes. Crane in foreground utilized for sub-assemblies. High capacity two hoist crane in background handles small assemblies as well as the completed machines.



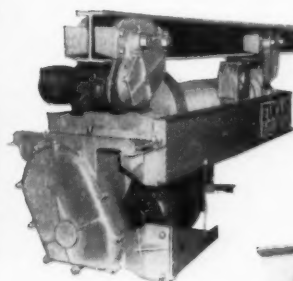
Long span heavy-duty, scrap yard crane with magnet and grapple designed to steel mill specifications.



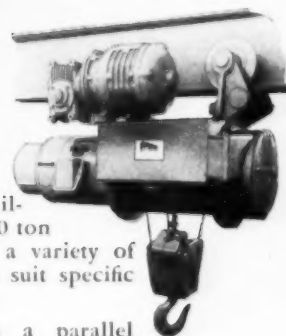
Heavy-duty gantry crane with four bridge motors. Designed for rugged continuous service.

*Write for the Euclid  
Crane Catalog*

stating the type and  
size of crane or hoist  
in which you may  
possibly be interested



High lift heavy-duty monorail hoist, designed for either motor driven or hand power trolleys, may be provided with cab or floor control in capacities up to 30 tons.



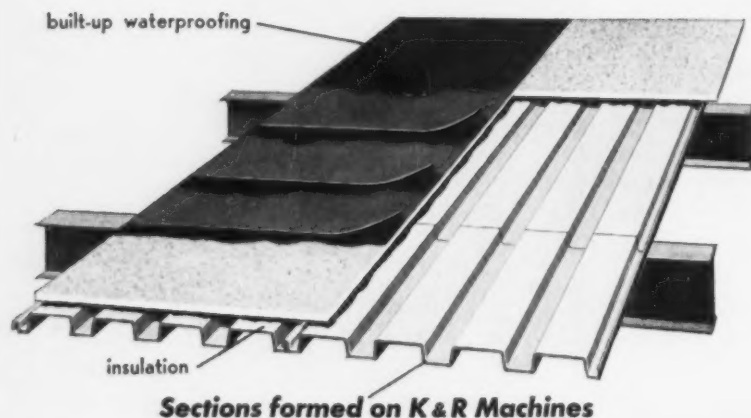
Series HB hoists are available in 3 to 10 ton capacities in a variety of mountings to suit specific requirements.

Illustrated is a parallel mounted hoist with cone gear trolley drive.

## **The EUCLID CRANE & HOIST CO.**

1361 Chardon Road • Cleveland 17, Ohio

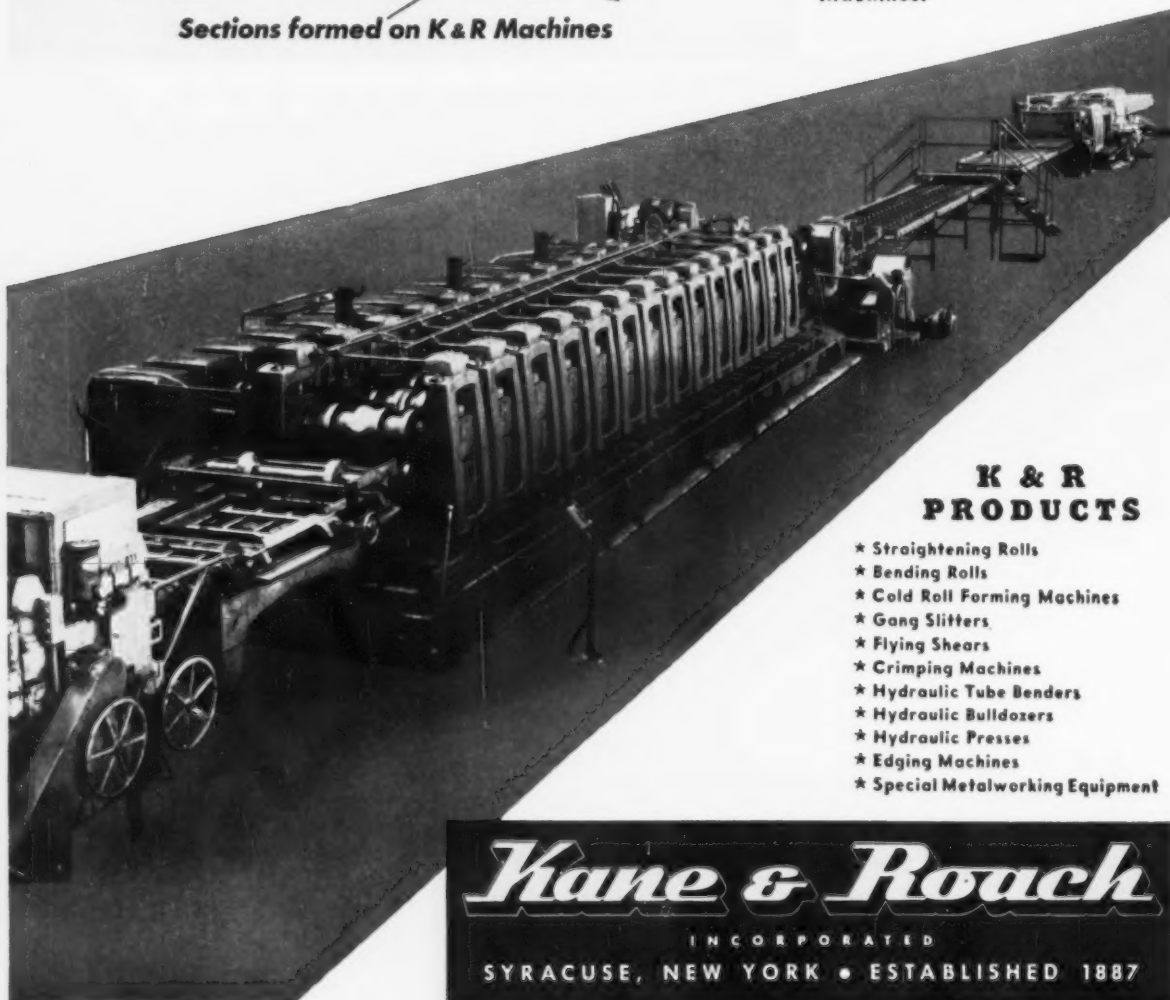
# THIS is the way "Robertson" forms STEEL DECK FLOORING



To meet the heavy demand for their Q Deck #3 and other sections

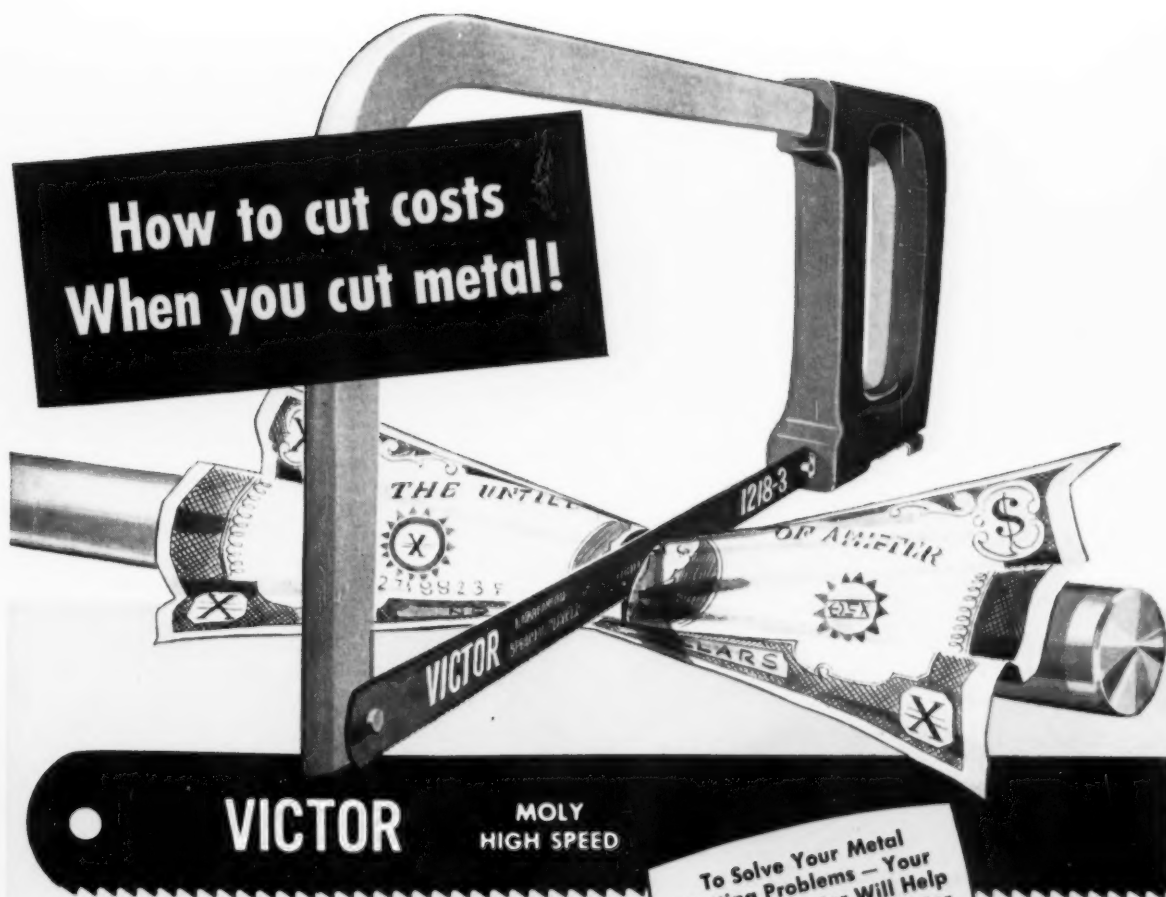
**H. H. ROBERTSON** has installed the new production line shown.

The forming of these sections is accomplished by the use of three K & R forming machines (arranged in straight line production) consisting of one 14 stand and two 4 stand K & R No. 5LS Cold Rolled Forming Machines.





**How to cut costs  
When you cut metal!**



**To Solve Your Metal  
Cutting Problems — Your  
Victor Distributor Will Help  
You Select the Right Victor  
Blade For Every Job!**

**No magic — just common sense! Victor Saw Blades are  
Better Blades — Do the Job Faster, Easier... Last Longer!**

Always specify Victor Blades for hand and power saws. It won't take long for you to see the difference...on the production line *and* on the cost sheets!

Because Victor Blades are made better — to give you what you need for efficient, low-cost, high-speed operation. Victor Blades provide uniformity, proper hardness, efficient tooth design... *plus* the convenience assured by ample set for clearance and clear, easy-to-read markings. These things add up to the reason why Victor is the best blade buy — everywhere!

**REMEMBER THESE 5 VITAL COST-CUTTING POINTS  
WHEN YOU ORDER SAW BLADES:**

- 1 UNIFORMITY** — Quality must be consistent...in every blade.
- 2 HARDNESS** — Blades must be heat treated and tempered to the proper degree.
- 3 EFFICIENT TOOTH DESIGN** — For fast and efficient cutting.
- 4 BALANCED SET** — For clearance and accuracy of cut.
- 5 CLEAR MARKINGS** — For easier, quicker identification.

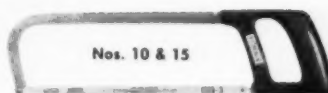
**AND REMEMBER:  
VICTOR GIVES YOU ALL 5!**



**SAW WORKS, INC. • MIDDLETOWN, N.Y., U.S.A.**  
*Makers of Hand and Power Hack Saw Blades, Frames  
and Metal and Wood Cutting Band Saw Blades*

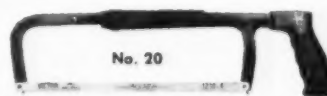
Ⓢ 3800

**No. 10** — Yellow  
molded handle.  
Shaped for com-  
fort. Almost in-  
destructible!



Patented Lever-Lock positions, tensions blades *automatically*. **No. 15** — Red molded handle, chrome-plate finish. Same features as No. 10.

**No. 20** — Gunmetal  
Finish, features ad-  
justable pistol-grip  
Frame, Lever-Lock  
for extra-easy  
blade change.



**FREE — FOR THE SHOP...** the Victor Metal Cutting Chart — an invaluable on-the-spot guide for shop metal workers.

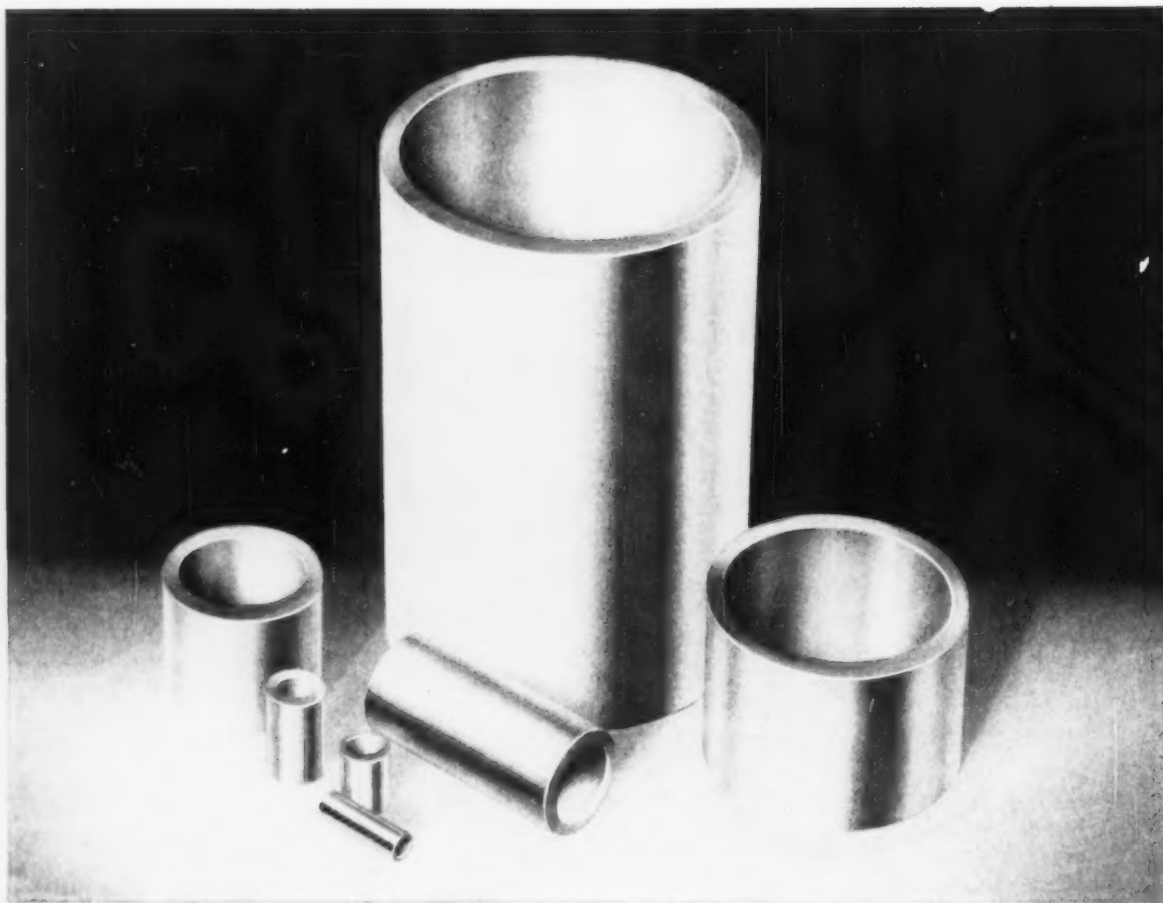
**FREE — FOR YOU...** Victor's Handy **METAL CUTTING GUIDE**...packed with valuable information on blade types, cutting techniques...feeds and speeds...plus important general metal cutting information.



**VICTOR SAW WORKS, INC.**  
Middletown, N. Y., U. S. A.

- ☐ Please send me the Victor Metal Cutting Chart  
☐ Please send me the Victor Metal Cutting Guide

Name \_\_\_\_\_ Title \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



## **From the smallest to the largest Your Savings Are Big with Johnson Standard Sleeve Bearings**

Your opportunities for substantial savings are BIG when you include Johnson standard sleeve bearings in your plans for manufacturing new equipment. They are made in volume from general purpose alloy and you can get them quickly from large stocks maintained by Johnson distributors everywhere. You pay no tool and die charges when you use standard bearings. The economy of producing and shipping them is passed along to you. In addition, the savings in time made possible by having stocks available often mean you can go into production faster.

Your design is not limited with Johnson standard sleeve bearings, for they are made in over 900 sizes—more than 200 combinations—inside diameters range from  $\frac{1}{4}$ " to  $4\frac{1}{2}$ ", will fit 47 different shafts—outside diameters range from  $\frac{3}{8}$ " to 5" and will fit 204 different housings—lengths range from  $\frac{5}{8}$ " to  $9\frac{3}{4}$ ". The alloy is Johnson 72 (SAE 660) which was selected to give the greatest resistance to wear and pounding with minimum reduction in plasticity value. These standard bearings may be altered quickly and economically with oil holes, slots and grooves—

even flanged, where it is necessary to overcome thrust.

Johnson is also a prime source for Universal bronze bars, Ledaloyl powder metallurgy bearings, electric motor bearings, and graphited bearings which are available in a wide range of sizes from stock.

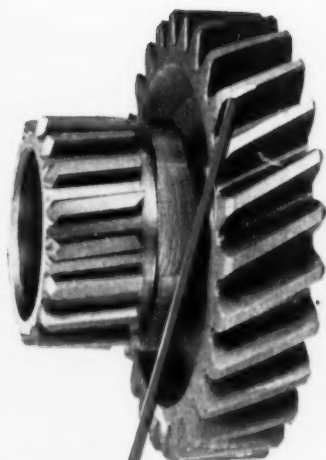
For information on how you can enjoy the economy of Johnson standard sleeve bearings, ask your distributor or write for bulletin which contains a chart giving details of size range and data on other stock bars and bearings. Johnson Bronze Co., 505 S. Mill St., New Castle, Pa.

# **Johnson Bearings**

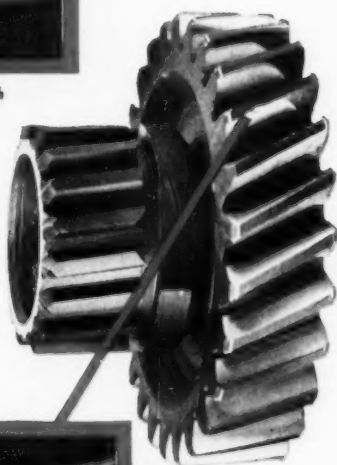
*Sleeve Bearing Headquarters*

# RED RING HARD GEAR HONING

## PRODUCES QUIET GEARS



Nicked Gear Tooth



Same Gear Tooth  
After Honing

Hard gear tooth honing is an entirely new approach to the vexing problem of intolerable gear noise arising from nicks, burrs, tooth roughness and minor heat-treat distortions.

Honing is not only far more effective than other processes used to combat gear noise but it is also much more economical. And it produces none of the undesirable after effects inherent in other processes such as heat checks, soft skin or residual stresses in the tooth metal.

Gear honing does four important things:

- Smooths off the swaged or raised metal surrounding tooth nicks.
- Eliminates burrs.
- Materially improves surface finish.
- Corrects minor heat-treat distortions in profile, index and lead.

When used as a final routine finishing operation following heat-treat, it eliminates the tedious and costly operation of searching for nicks and then correcting them. It improves the quality, uniformity and performance of all gears produced.

SPIN AND HELICAL GEAR SPECIALISTS  
ORIGINATORS OF ROTARY SHAVING  
AND ELLIPTICAL TOOTH FORM

### NATIONAL BROACH & MACHINE CO.

5600 ST. JEAN • DETROIT 13, MICHIGAN

Patents pending

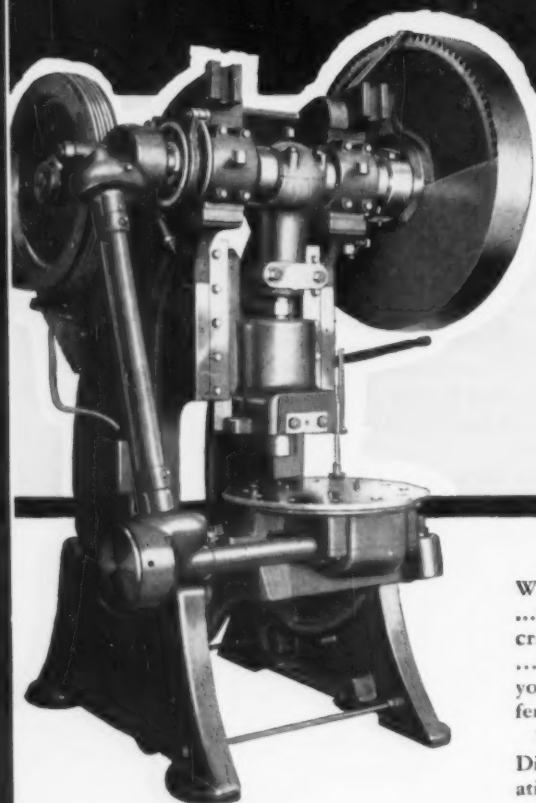
WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

7631

January 3, 1957

89

MODERN  
FEDERAL  
DIAL  
FEEDS  
have what  
it takes!



No. 7 Dial Feed  
Capacity, 80 tons

## VERSATILITY plus AUTOMATION

What's the job? Drawing...staking...forming...piercing...stamping...crimping...punching...broaching...burring...assembling? Maybe in your plant it's all of them, or a different, unique operation.

We'll lay two-to-one that Federal Dial Feeds are just what your operation needs. For the possibilities of this press with special jiggings are

practically unlimited. Add automatic feed and ejection and you have the answer to many cost problems.

Modernize now with Federals and eliminate the need for expensive, specialized equipment. Rugged, precision-built Federals embody the finest materials and workmanship. Available in sizes from 6 to 80 tons. *Write for new Dial Feed Catalog.*

THE FEDERAL PRESS COMPANY  
702 Division Street, Elkhart, Indiana

# FEDERAL DIAL FEED PRESSES

31 Years' Experience in Dial Feed Engineering and Construction





# For faster, smoother lifts with less downtime... depend on versatile **LIMA CRANES**



Type 44 Crawler-mounted Crane handling sugar cane at a Cuban mill.



Type 34 Wagon Crane, magnet equipped, unloading coils of hot strip steel



Type 54-T Truck Cranes setting 31-ton, 50,000-gallon tank.

LIMA crawler or rubber mounted cranes have the capacity, power and mobility to handle most any kind of material handling job. They are designed and built with the emphasis on quality to insure constant peak performance with minimum downtime.

The ground-gripping stability of the LIMA crawler type crane makes possible greater lifting capacities with longer booms at lower angles. Crawler type cranes are available up to 110 tons capacity.

For the job where mobility is an important factor, LIMA cranes on rubber provide the added benefits of less travel time between jobs and better maneuverability. Rotating assemblies have the same basic features as corresponding crawler type machines with alterations adapting them to truck or wagon mountings. LIMA cranes on rubber are available in capacities up to 50 tons.

Find out how LIMA cranes will give you more lift on long booms. See your nearby LIMA distributor for detailed information. Or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

## CRAWLER TYPE

- Available in variable capacities
- Travel speed up to 1 mph
- All major operations air controlled except Types 34 and 44
- Independent boom hoist
- Long-wide crawlers for greater stability

## TRUCK TYPE

- Mounted on LIMA 10 wheel truck carrier
- Powered by two engines (one in carrier, one in rotating frame)
- Travel speed, 25 mph
- Types 24, 34, 44, 54 and 74 available with truck mounting

## WAGON TYPE

- Types 24, 34, 44, 54, 64 and 74 available with wagon mounting
- One engine powers all operations, including travel
- One operator controls all operations from cab
- Rotating assemblies have same basic quality features as corresponding crawler-type machines

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA**

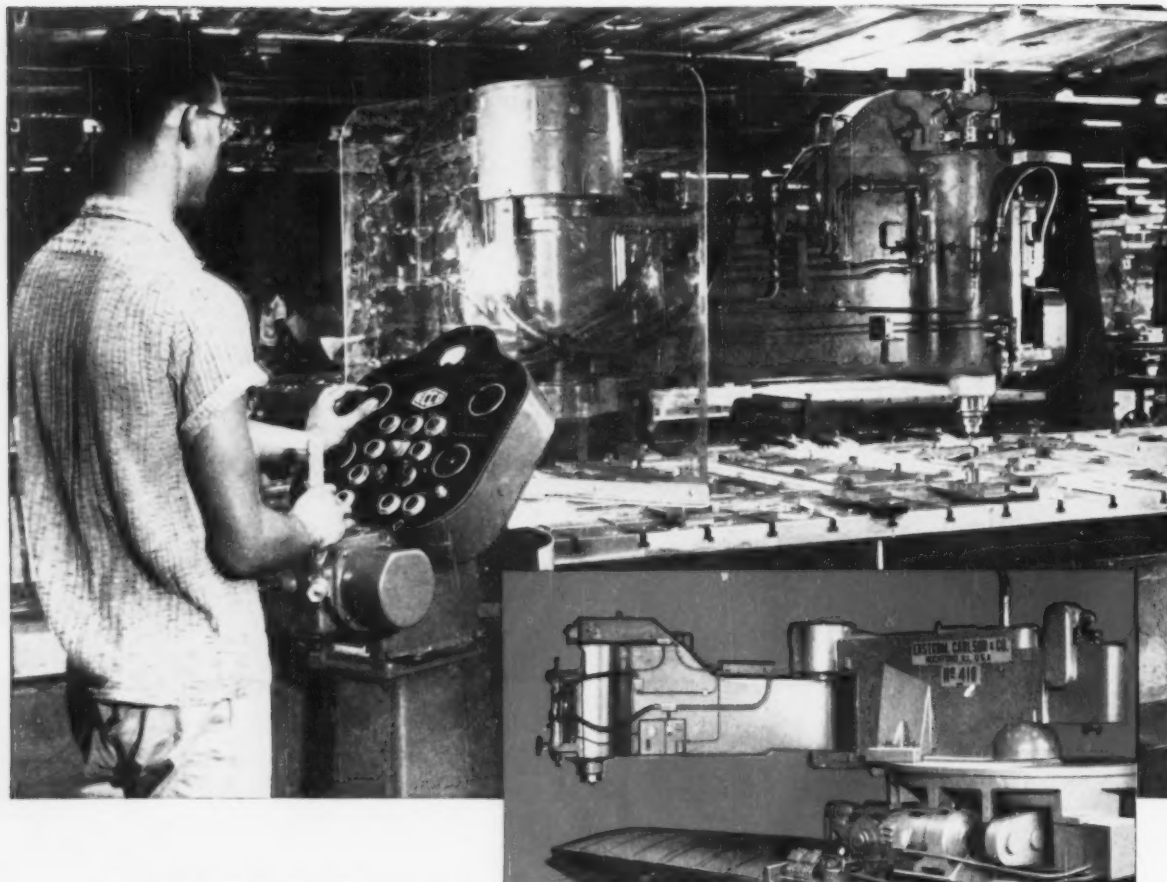
SHOVELS • CRANES  
DRAGLINES • PULLSHOVELS



**BALDWIN-LIMA-HAMILTON**  
Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation  
Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works





## RELIANCE DRIVES NEW MILLING MACHINE

This unique milling machine designed for milling big aircraft parts operates exactly like a huge arm. Its cutter swoops in and out at the touch of the joy stick control. The direction in which the stick is pushed is the direction of the head movement. The harder the push the faster the movement.

This unusual feed drive is made possible by a Reliance V\*S Drive. Two 7½ hp. Variable Speed D-c. Motors, one each at shoulder and elbow, provide the flexible arm-like feed move-

ments. The motors are controlled and directed by the joy stick.

The result is an extremely compact and versatile feed drive that gives eye-popping performance. Economical in original cost, these Reliance Drives will provide years of steady service with little maintenance.

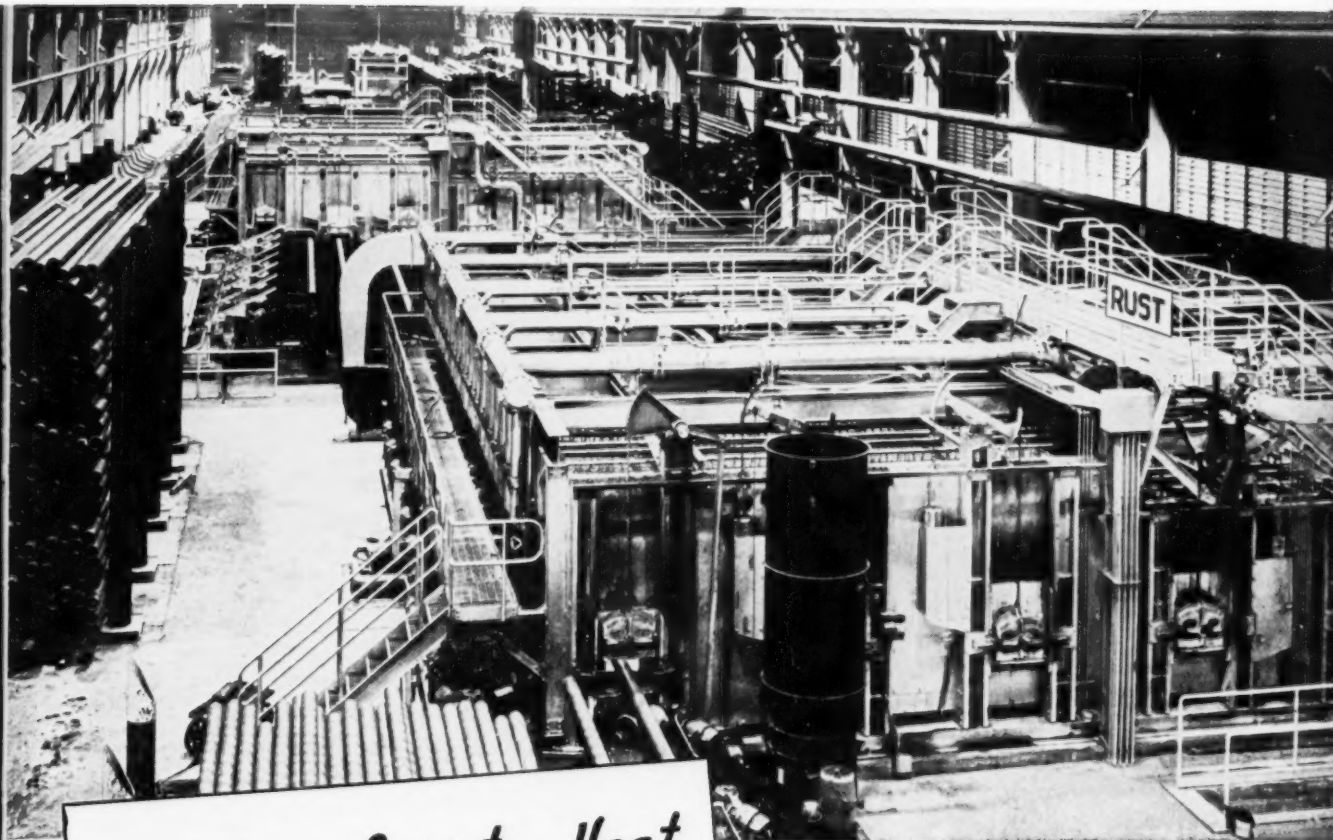
If you are designing, building or buying machine tools, it will pay you to check the economies of Reliance Variable Speed Drives.

A-1516



**RELIANCE** ELECTRIC AND  
ENGINEERING CO.

DEPT. 27A, CLEVELAND 10, OHIO • CANADIAN DIVISION: WELLAND, ONTARIO  
Sales Offices and Distributors in Principal Cities



*116 Tons Less to Heat  
in this roof*

Here's another case where light weight means lower cost. The roof of this walking beam furnace is 2,320 square feet. B&W Insulating Firebrick suspended construction for a 9-inch roof weighs about 30 lbs per square foot, including the weight of rods, hangers, pipe, brick and mortar. This is approximately 100 lbs per square foot less than an arch constructed of heavy firebrick plus insulation having the same heat flow. *This saving means the B&W IFB roof is 116 tons lighter.*

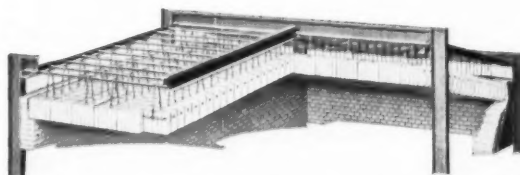
### Here are the money-saving benefits of B&W suspended construction:

1. Supporting steel is less massive, far less costly. Commercial size steel can be used for roof suspension instead of special castings.
2. B&W Insulating Firebrick heat up and cool down faster. This means lower fuel costs, faster inspection.
3. Furnace temperatures can be changed quickly. When different steels call for different heating schedules, the furnace temperature can be adjusted in minutes instead of hours.
4. Installation costs are lower because these lightweight brick can be handled faster and easier than ordinary heavy firebrick.

For complete information on B&W IFB—the *lightest* weight insulating firebrick, write to B&W today or call your local Refractories Engineer.

### because of B&W Insulating Firebrick suspended construction

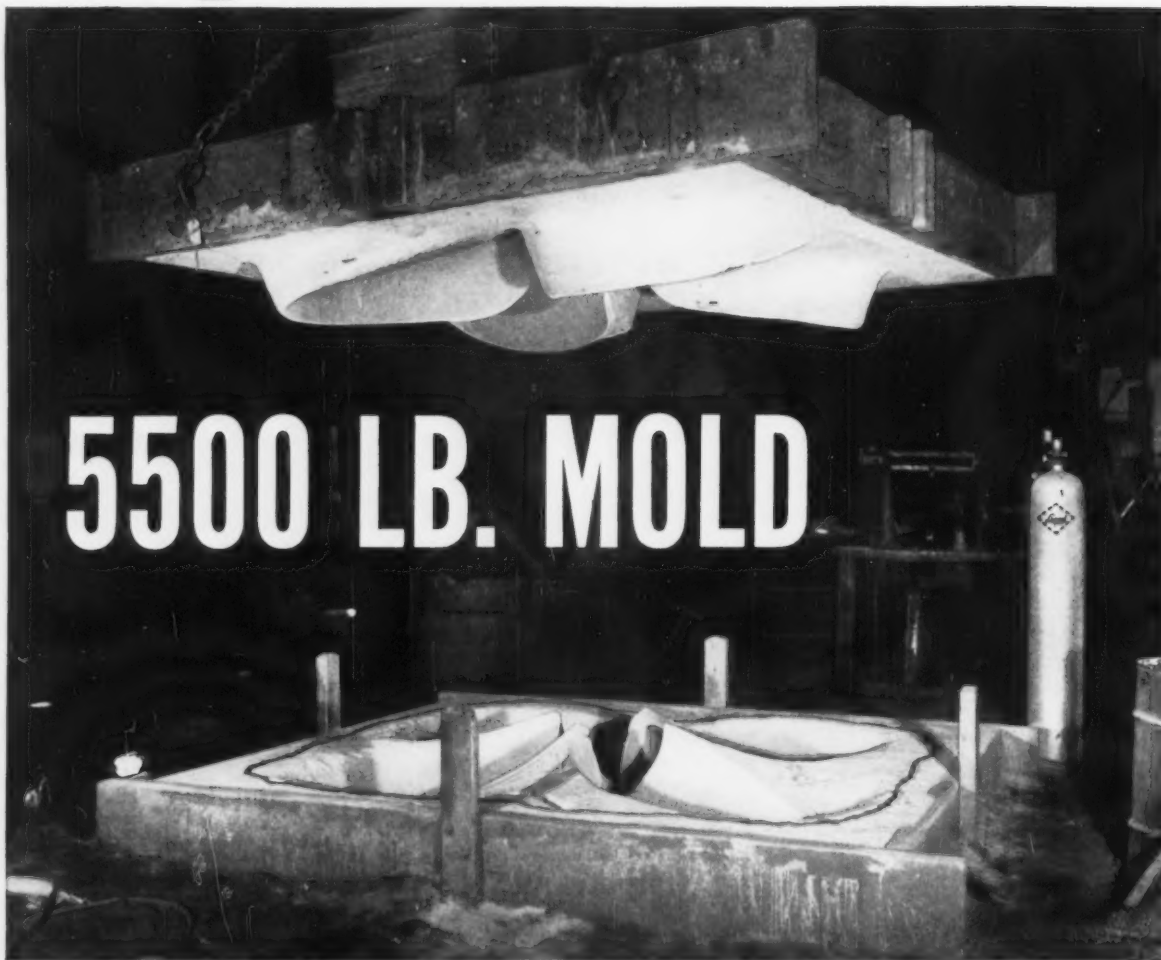
The new walking beam furnace (shown in photograph above) was designed and constructed by Rust Furnace Company for Jones & Laughlin Steel Corporation. Seamless pipe is conveyed into the furnace, moves slowly from left to right on walking beam rails designed and furnished by York-Gillespie Mfg. Co., and passes out the exit door.



This is a cross-sectional drawing of a typical suspended arch arrangement using B&W Insulating Firebrick. It can be used in flat or sloping roofs, nose arches and many other types of suspended furnace construction.



# CO<sub>2</sub> CURES



## 5500 LB. MOLD

## IN 40 MINUTES!

Fast, bakeless hardening of molds for large castings—like this one for 3400 pound nickel aluminum bronze propellers—is standard procedure at Columbian Bronze Corporation, Brooklyn, New York.

In addition to tremendous savings in time, Columbian Bronze reports these added advantages from CO<sub>2</sub> curing.

- no baking required • far fewer gaggers needed •
- elimination of need for extreme skill necessary in green sand molding • no danger of drops, soft spots or wet spots in mold • molds may be left for several days before pouring.

For complete facts and technical data on how CO<sub>2</sub> mold curing will revolutionize your operation, contact

World's Largest Producer of   
THE LIQUID  
CARBONIC  
CORPORATION

3164 South Kedzie Avenue • Chicago 23, Illinois



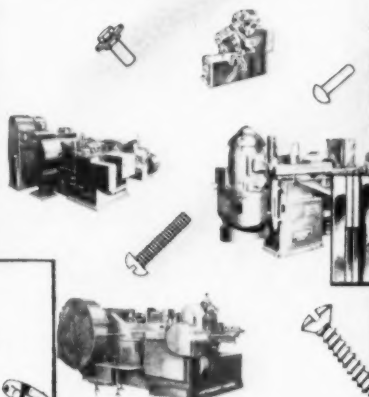
# 4 WATERBURY FARREL DOORS TO LOW COST PRODUCTION

The men behind these four Waterbury Farrel doors design and build machinery to help you lower your production costs.

Each Waterbury Farrel division has its own fund of specialized engineering talent and experience to draw upon in solving your specific machinery problem. And, each is backed by Waterbury Farrel's reputation of more than a century of successful machine building.

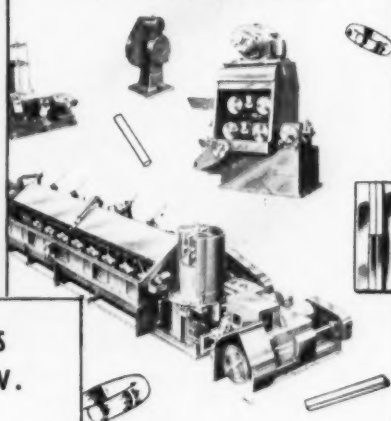
Inside the appropriate Waterbury Farrel door you'll find the engineering skill and ingenuity to evaluate your requirements and provide the proper equipment.

## COLD HEADING EQUIPMENT DIV.



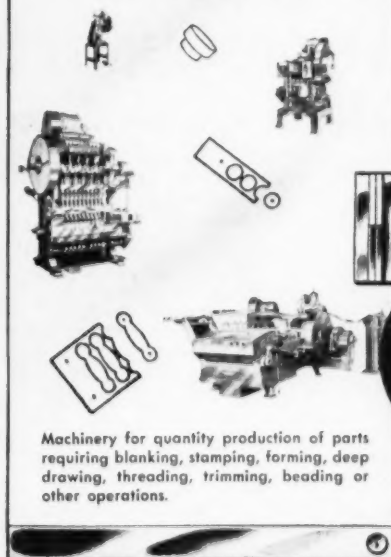
Machinery for mass production of standard and special bolts, nuts, rivets, screws and other cold formed parts.

## WIRE MILL EQUIPMENT DIV.



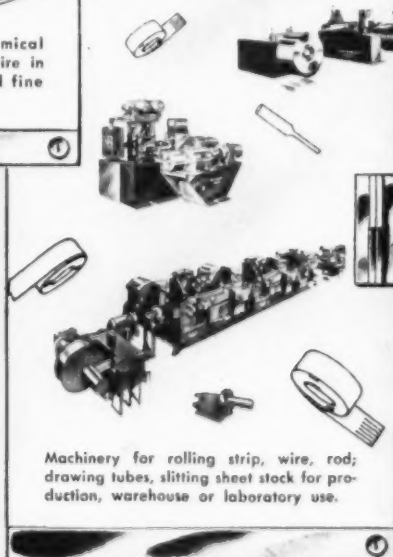
Machinery for the economical drawing of non-ferrous wire in heavy, intermediate and fine wire sizes.

## POWER PRESS EQUIPMENT DIV.



Machinery for quantity production of parts requiring blanking, stamping, forming, deep drawing, threading, trimming, beading or other operations.

## ROLLING MILL EQUIPMENT DIV.



Machinery for rolling strip, wire, rod; drawing tubes, slitting sheet stock for production, warehouse or laboratory use.



Write for free "4 in 1" booklet or contact your nearest Waterbury Farrel office.



Bolt, Nut & Screw Machinery



Power Presses



Rolling Mill Machinery



Wire Mill Equipment

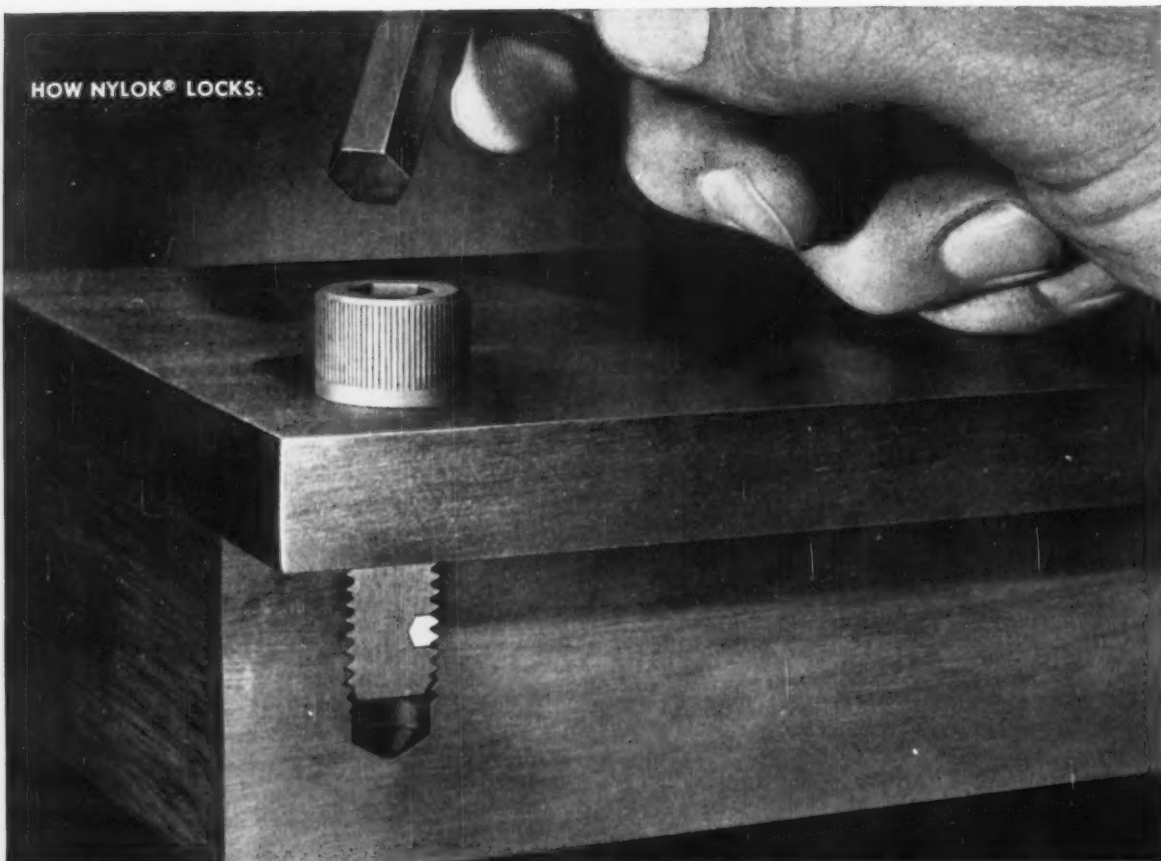
**THE WATERBURY FARREL  
FOUNDRY & MACHINE CO.**

Waterbury, Conn.

Sales Offices: Chicago • Cleveland • Millburn, N. J.

WF-29

HOW NYLOK® LOCKS:



**LOCKED!** The tough, resilient nylon pellet keys itself into the mating threads. It forces threads together and locks the screw securely.

## NEW—self-locking UNBRAKO socket head cap screws



Self-locking UNBRAKO socket head cap screw.

**They won't work loose. And they simplify design and save production time.**

UNBRAKO socket head cap screws are now available embodying the Nylok® self-locking principle. Nylok provides the first truly practical solution to the problem of making cap screws self-locking.

An UNBRAKO cap screw with Nylok is a single self-locking unit. No auxiliary locking devices are needed. Just thread the UNBRAKO into any tapped hole. *Seated or not*, it locks positively wherever wrenching stops. The tough, resilient nylon pellet forces mating threads together and holds tight. The screw will not work loose.

You save production time when you make products with self-locking UNBRAKOS. And you get greater simplicity in design with less bulk and weight. The number of parts you must assemble to achieve full locking action is reduced to the absolute minimum. Lockwashers under screw heads are no longer necessary. Costly wiring of cross drilled heads is eliminated. And in many

cases you will save weight and mass by using shorter screws in tapped holes instead of drilling through and using nuts and lockwashers.

Self-locking UNBRAKOS are reusable. They have uniform locking and installation torques—with no galling or seizing on mating threads. They successfully withstand temperatures from  $-70^{\circ}$  to  $250^{\circ}$ F. And, when screws are properly seated, the locking pellet also functions as a liquid seal.

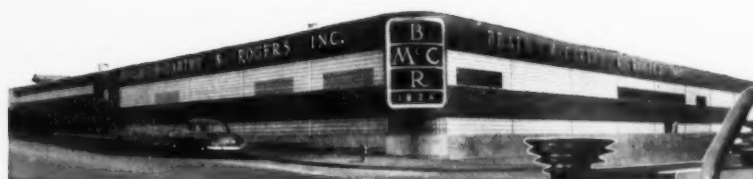
A complete line of self-locking UNBRAKO socket screw products, in a wide range of standard sizes, materials and finishes, is available through your authorized industrial distributor. Technical data and specifications are detailed in Bulletin 2193. Write us for your copy today. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

\*T.M. Reg. U.S. Pat. Off., The Nylok Corporation

STANDARD PRESSED STEEL CO.

UNBRAKO SOCKET SCREW DIVISION

**SPS**  
JENKINTOWN PENNSYLVANIA



## **"BUFFALO" NO. 22 DRILL HELPS DISTRIBUTOR MAKE UP DIE SETS THE DAY THEY'RE ORDERED**

Beals, McCarthy & Rogers, prominent steel and industrial supplies firm, makes up any of 987 die sets the same day a customer orders! To render this unique and speedy service, BM&R set up an extensive parts stockroom and completely equipped shop in its Buffalo, N. Y. warehouse. Their machines permit a rapid, accurate sequence of drilling, tapping, honing and other machining operations.

For the exacting work of drilling and tapping up to  $1\frac{1}{4}$ " holes in punch and die holders, BM&R selected this "Buffalo" No. 22 Drill. Reasons for the choice: (1) adequate, smooth power for this high-capacity work; (2) full rigidity and strength for long life and accuracy; (3) easy operation and adjustments — as easy as with small sensitive drills; and (4) the precision ball bearing spindle which makes "Buffalo" Drills so reliable. Too, BM&R knows "Buffalo" quality and workmanship first-hand. They've sold the wide "Buffalo" line of drills for many years, and have seen these machines perform in hundreds of shops served by BM&R.

For the best drilling value and lowest drilling cost in your shop, make it "Buffalo", the choice of leading shops for 80 years.



### **BUFFALO FORGE COMPANY**

492 Broadway, Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.



**if you use**



CF&I-Wickwire produces many different types of specialty wire. In addition, they offer you all of the advantages afforded by their modern wire-producing facilities as well as the priceless knowledge gained during their century and a quarter of wire-making experience.

**Check This List!**

**FOR THE WIRE YOU REQUIRE, SEE CF&I-WICKWIRE**

**FLAT AND SHAPED WIRES**

Armor Wire  
Bobby Pin Wire  
Bookbinder Wire  
Brush Wire  
Casing Wire  
Cotter Pin Wire  
Curtain Spring Wire  
Die Spring Wire  
Gutter Broom Wire  
Lock Spring Steel  
Rake Tine Steel  
Regulator Spring Wire  
Snake Fishing Steel  
Stapling Wire for Preformed Staples (Flat)

**LOW CARBON FINE AND SPECIALTY WIRE**

Bee Wire  
Bonnet Wire  
Bookbinder Wire  
Broom Wire  
Clip Wire  
Dent Spacer Wire  
Drapery Pin Wire  
Florist Wire  
Fuse Wire

Glass Netting Wire  
Hairpin Wire  
Hook and Eye Wire  
Mattress Wire  
Picture Cord Wire  
Picker Tooth Wire  
Pin Ticket Wire  
Pin Wire  
Ring Traveler Wire  
Spiral Binding Wire  
Stapling Wire  
Stapling Wire for Preformed Staples  
Stone Wire  
Weaving Wire  
Weaving Wire for Fly Screen Cloth  
Wissco Iron Wire

**HIGH CARBON FINE AND SPECIALTY WIRE**

Aircraft Cord Wire  
Armor Wire  
Belt Hook Wire  
Bobbin Ring Wire  
Brush Wire (Tempered and Untempered)  
Brush Wire (High Strain)

Chrome Vanadium Spring Wire  
Core Wire (Aluminum Cable Steel Reinforced)  
Curtain Spring Wire  
Flexible Shaft Wire  
"Gamma" Spring Wire (Upholstery Spring Wire)  
Zig Zag Wire  
No-Sag Wire  
Hat Wire  
Heddle Wire  
Hose Reinforcement Wire  
Hose Wire, Mechanical  
Hose Wire, Vacuum and Defroster  
Rope Wire  
Signal Corps Wire  
Spoke Wire  
Hard Drawn Spring Wire  
Oil Tempered Wire  
Spheroidized or Annealed Spring Wire  
Tire Bead Wire  
Valve Spring Wire

**MANUFACTURERS LOW CARBON COARSE WIRE**

Bag Tie Wire

Basket Handle Wire  
Box Binding Wire  
Brush Handle Wire  
"Cal-Tie" Wire  
Can Key Wire  
Case Hardened Ball Wire  
Chain Wire  
Clamp Wire  
Clothes Pin Wire  
Concrete Wall Reinforcement Wire  
Garment Hanger Wire  
Hay Baling Wire (Coiled)  
Lingo Wire  
Lintel Wire  
Loop Wire  
Merchant Quality Wire  
Pail Bail Wire  
Rivet Wire  
Stapling Wire  
Strand Wire  
Tying Wire  
Welding Wire  
Wissco Iron Wire  
Industrial Quality Wire  
Cold Rolling Quality Wire  
Heading, Forging or Roll Thread-  
ing Quality Wire  
Medium High Carbon Wire



**CF&I-WICKWIRE WIRE**  
**THE COLORADO FUEL AND IRON CORPORATION**

**THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver  
El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita

**PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane

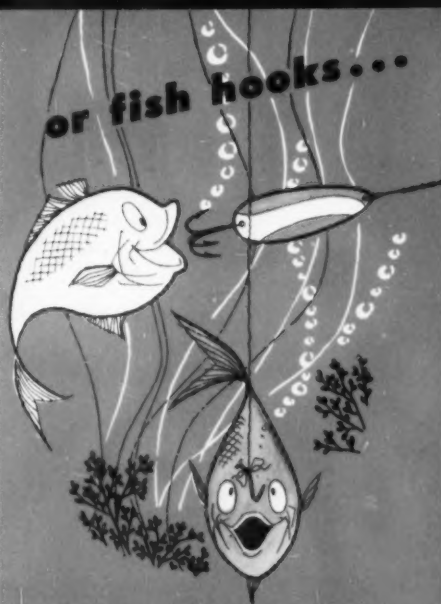
**WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

**CF&I OFFICES IN CANADA:** Montreal • Toronto • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg





**for  
upholsterers'  
hog rings...**



**or fish hooks...**



**or florists' frogs...**

**or bee hives...**



**or pail bails...**



**or can keys...**



**or any of  
countless other  
products that  
require  
wire...**



**it'll pay you  
to investigate  
CF&I-WICKWIRE  
as a source for  
your wire needs**

# You Get Practical Help on Vapor Degreasing of Metals



Your Du Pont technical man and your distributor for "Triclene" D trichlorethylene are but a phone call away when you need fast, practical help in vapor degreasing.

The broad experience of the Du Pont Technical Representative and the skill and facilities of Du Pont research and laboratories assure you of the finest in technical help. The Du Pont technical man's job is to help you keep your vapor degreasing at top efficiency—whether a complete analysis of your operation is required, or a quick solution to an immediate problem.

Call him direct, or ask your distributor of "Triclene" D for his services. They're yours for the asking. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Dept., Wilmington 98, Delaware.



BETTER THINGS FOR BETTER LIVING  
...THROUGH CHEMISTRY

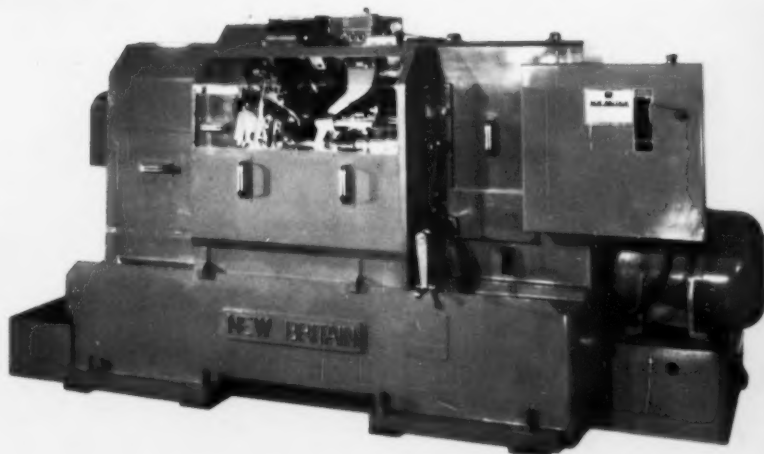
## Technical Representatives at Your Call

- \* **In New England**  
W. Sparkes, Boston, Mass., HAncock 6-1714
- \* **In Metropolitan New York**  
A. L. Denkwalter, New York, N. Y., LOnacre 3-6440
- \* **In Upstate New York**  
E. H. Traub, New York, N. Y., LOnacre 3-6440
- \* **In Philadelphia**  
J. E. Goodridge, Philadelphia, Pa., Mldway 9-1420
- \* **In Cleveland**  
V. J. Zaffke, Cleveland, Ohio, CHerry 1-6078
- \* **In Cincinnati**  
J. D. Nelles, Cincinnati, Ohio, PArkway 1-5253
- \* **In Detroit**  
J. J. Hargarten, Detroit, Michigan, UNiversity 4-1963  
K. B. Fish, Detroit, Michigan, UNiversity 4-1963
- \* **In Chicago**  
R. L. McKeown, Chicago, Illinois, INdependence 3-7250  
C. W. Burkemper, Chicago, Illinois, INdependence 3-7250
- \* **In the Southwest**  
J. G. McKernan, Dallas, Texas, VICTor 2517
- \* **On the West Coast**  
G. W. Davis, San Francisco, California, EXbrook 2-6230  
R. J. Dent, El Monte, California, CUMb. 3-2761
- \* **In the South**  
O. S. McCullers, Charlotte, N. C., FRanklin 5-5561

WHEREVER YOU TURN  
*on multi-spindle bar machines*  
 NEW BRITAIN HAS THE MACHINE FOR YOU



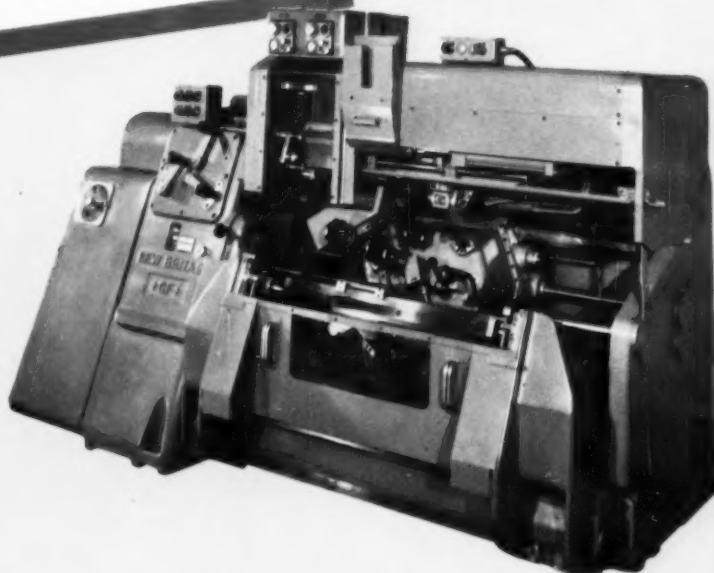
The new Model 62 New Britain bar machine has an independent radial cross slide in every position — opening new possibilities for effective tooling. New Britain "accuracy features" include spindle carrier lifting to eliminate wear during index, plus rigid locking of the carrier during the cutting cycle. Magazine loading available if desired.



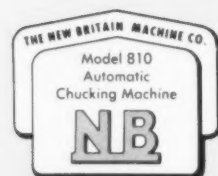
WHEREVER YOU TURN  
*long or short runs*  
 NEW BRITAIN HAS THE MACHINE FOR YOU



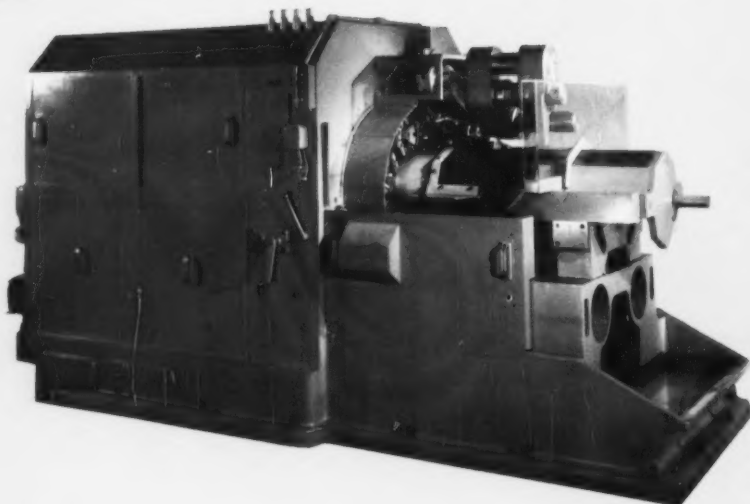
The original New Britain +GF+ copying lathe has grown into an extensive line, to meet the demand for the wide variety of applications for its better copy-turning principle. Regardless of length of run or the variety of pieces you make, you can use the New Britain +GF+ profitably. Basic advantages are: fast setup, inexpensive tooling, elimination of the chip problem, minimum operator fatigue, and dimensional accuracy with good surface finish to reduce grinding allowances. Optional features include automatic re-cycling, automatic loading and ejecting.



**WHEREVER YOU TURN**  
*castings, forgings or pressed metal pieces*  
**NEW BRITAIN HAS THE MACHINE FOR YOU**



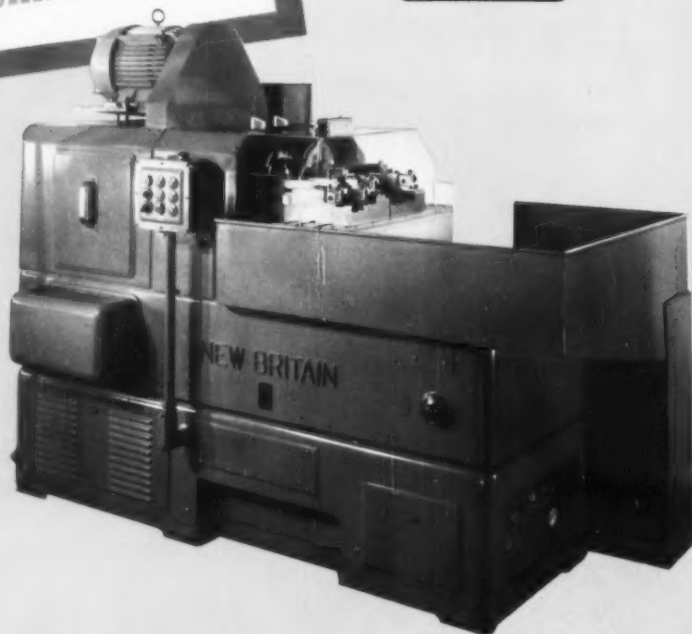
Versatility, accessibility, quick setup and sustained high production of precision parts are what you look for in an automatic chucker. New Britains are famous for these features all over the world. Perhaps you are also thinking of the possible savings which automatic loading, unloading and automatic gauging could effect. If so, you will want to learn about the imaginative use of automated production which New Britain engineers are applying to chucker work these days. You can now handle bigger pieces than ever on New Britains too — up to fifteen inches in diameter.



**WHEREVER YOU TURN**  
*or bore precision contour work*  
**NEW BRITAIN HAS THE MACHINE FOR YOU**



New Britain precision straight and contour boring machines provide a new approach to machining parts that would be problem pieces on any other type of equipment. These simple, fast, accurate machines require minimum attention and utilize inexpensive single point tools. They make the most profitable use of automatic loading, gauging and tool adjustment where these features fit the job requirements. The New Britain Machine Company, New Britain-Gridley Machine Division, New Britain, Connecticut.





# NOTHING *can* equal *Stainless Steel*

*in its unique combination of properties*

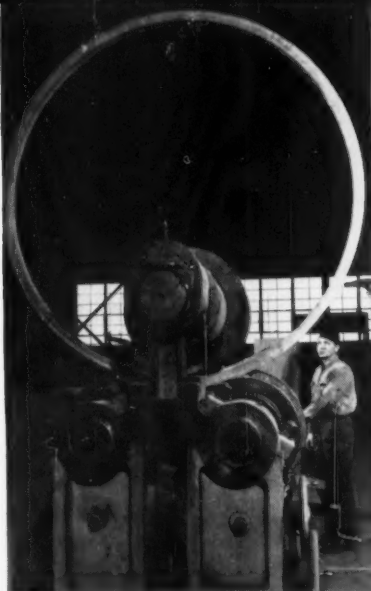
No other design material can match Stainless Steel in its unique combination of desirable properties: corrosion resistance, strength, hardness, beauty, cleanability and easy fabrication. If you're looking for a reliable source of supply, remember that United States Steel offers you the widest range of types, finishes and sizes.

UNITED STATES STEEL CORPORATION, PITTSBURGH  
AMERICAN STEEL & WIRE DIVISION, CLEVELAND  
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO  
NATIONAL TUBE DIVISION, PITTSBURGH  
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.  
UNITED STATES STEEL SUPPLY DIVISION,  
WAREHOUSE DISTRIBUTORS  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS  
PIPE • TUBES • WIRE • SPECIAL SECTIONS

UNITED STATES STEEL



### For Formability . . .

Jet engine and pressure vessel makers are using roll-formed rings in large numbers these days. Alloy Manufacturing Company in Pittsburgh is a major supplier of Stainless Steel fabricated parts, and they process this steel on ordinary "carbon steel rated" equipment without difficulty.

### For Cleanliness . . .

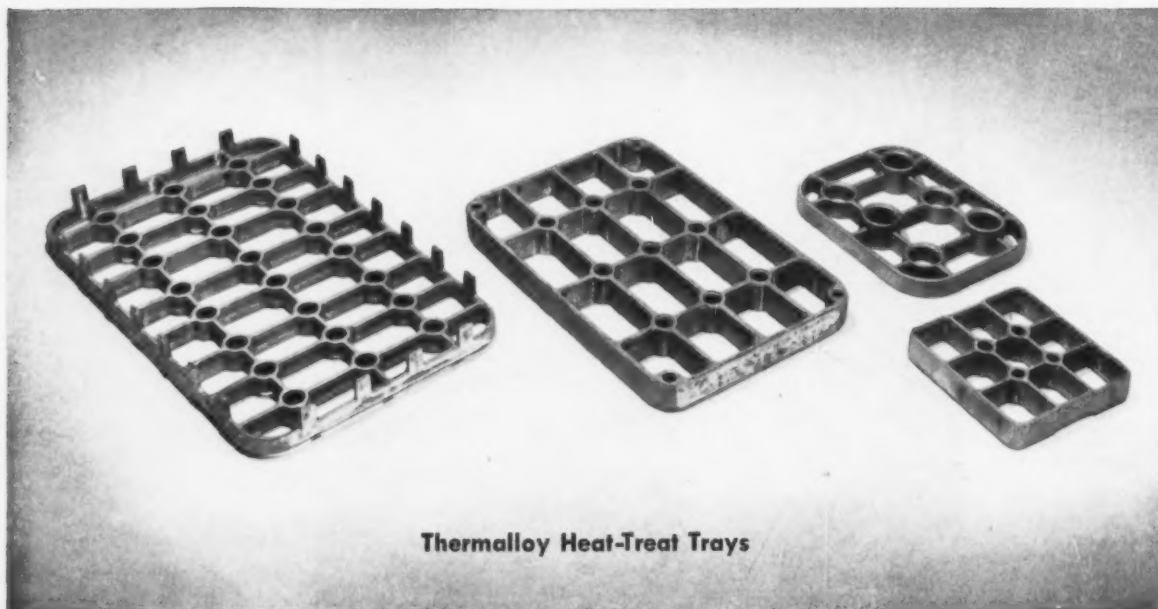
Bates Manufacturing Company, Lewiston, Maine, is a famous name in cotton goods. They used to have trouble with dyeing equipment; the iron vats held the old colors and "killed" new colors. With Stainless Steel dye kettles, old colors actually *rinse* out, without costly scrubbing.

### For Style . . .

G & G Woodcraft, Dinette Division, in Detroit, is selling a handsome new dinette table, designed by Gelitis, with a polished Stainless Steel top. The top is backed with plywood, and there is no metallic sound when it is struck. Stainless is a perfect material for contemporary design, and it's so *practical*.



## WHAT'S YOUR HEAT-TREAT PROBLEM?



Thermalloy Heat-Treat Trays

### For cost-saving answers...look to **Thermalloy\***

Let us show you how to cut heat-treat costs with parts cast of Thermalloy!

Tough, heat-resistant Thermalloy is not just one alloy, but a *group* of alloys—each developed to meet a specific heat problem, whether it be high or indeterminate stress, thermal fatigue, oxidation or chemically reactive media.

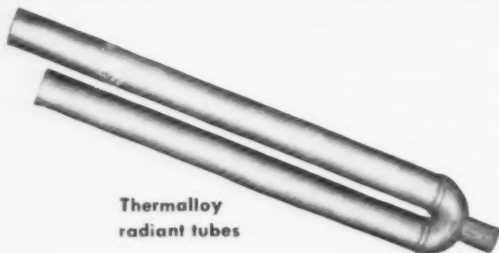
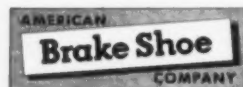
At Electro-Alloys, an experienced metallurgical and engineering staff is available to

help you put Thermalloy's qualities to work, to increase the life of your heat-treat parts. They can specify the type of Thermalloy best suited to your particular need and also contribute helpful design suggestions on your heat-treat parts.

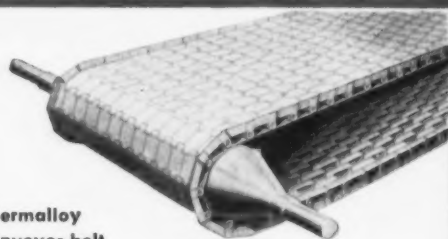
Call your nearby Electro-Alloys representative. Or write for Bulletin T-225, Electro-Alloys Division, 8011 Taylor St., Elyria, Ohio.

\*Reg. U. S. Pat. Off.

ELECTRO-ALLOYS DIVISION • Elyria, Ohio



Thermalloy  
radiant tubes



Thermalloy  
conveyor belt

# How BRAINARD STRAPPING SERVICE saved 89% on shipping cost

**PACKAGE COST** for shipping these concrete "edgers" was cut 89% at the Heltzel Steel Form & Iron Company by converting from expensive wood crates to corrugated cartons strapped with  $\frac{1}{4}$ " Brainard .015 strap. Other savings:

## LOWER FREIGHT COSTS

Strapped carton weighs 19 pounds less.

## FASTER OPERATION

One man does job of two required in former operation.

## EASY STORAGE

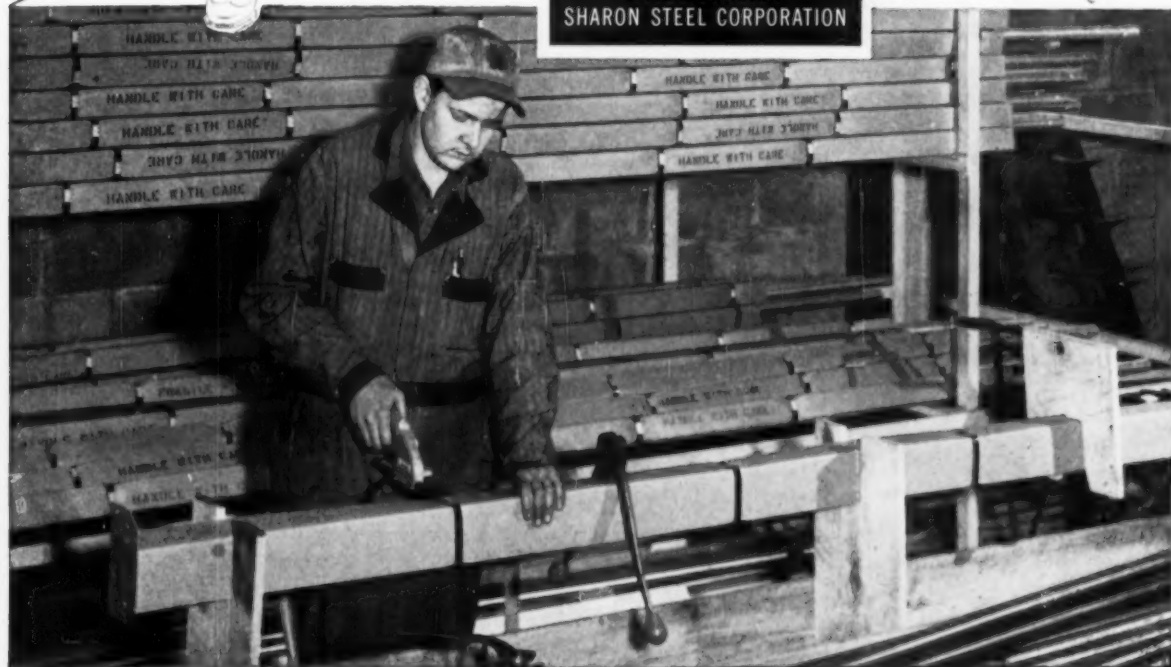
Two cartons displace one wood crate, which frequently warped with changing weather conditions.

This cost-cutting operation was recommended by a Brainard strapping expert. No matter what you make, package or ship, a nearby Brainard representative can show you the way to similar savings. Call him today, or write:



**THE BRAINARD  
STEEL DIVISION**  
of the Sharon Steel Corporation  
Dept. I-1, Griswold St.  
Warren, Ohio

MAKERS OF QUALITY STEEL STRAPPING





## Here's what steel Kaiser

**COMPARATIVE ENDWALL TRIAL** "... had inspected walls day prior to accident and noted Kaiser Periclase Chrome Metal Encased Brick sections were plumb, in line and tight whereas competitive sections were bowed and leaking."

**BACKWALLS** "... having tremendous success with Kaiser Chrome Periclase Brick in backwalls ... on rebuild, gave instructions to leave it in for another campaign."

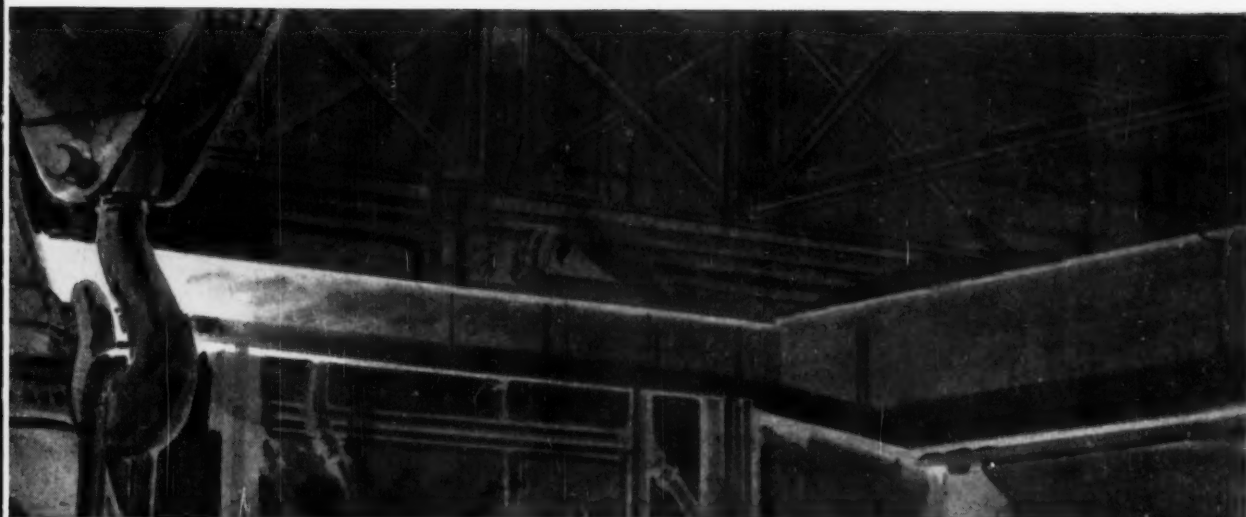
**HOT TAP HOLES** "... averaging between 20 and 25 heats with Permanente 165 on the 300-ton furnaces, where competitive mix previously gave 3 to 5 heats."

**ENDWALLS** "... Panels of Kaiser Periclase Chrome Metal Encased Brick went 402 heats while competitive panels in the same campaign were replaced at 265 heats."

**BOTTOM PERFORMANCE** "... Permanente 165 bottom has tapped 413 heats with delay figure of 3 minutes while competitive bottom - rammed five days earlier - has tapped only 360 heats with an average delay figure over bogey of 11 minutes."

**ENDWALLS** "... Furnace finished its third campaign using Kaiser Periclase Chrome Brick end-wall for a total of 562 heats. Other furnaces using competitive brick usually lasted only 200 heats - one campaign."





## industry users are saying about Basic Refractories

One of the most significant things about these statements from Kaiser Chemicals customers is that each of them illustrates a *new performance or production record* made possible by changing to a Kaiser Chemicals basic refractory product.

Why this uniform superiority?

Kaiser Chemicals refractories are *especially designed* for peak performance in specific applications in open hearth and electric steel furnaces. Each is a specially-developed composition . . . each is backed by more than 15 years of continuous research and development.

The uniform composition of Kaiser Chemicals

refractories—your guarantee of dependability—is assured by Kaiser Chemicals fully-integrated facilities, controlling quality from initial production of sea water magnesia to assistance in final installation at your mill.

Call or write Kaiser Chemicals Division, Dept. S7141, Kaiser Aluminum & Chemical Sales, Inc., at any of the addresses listed below.

PITTSBURGH 22, PA. . . . 3 Gateway Center  
HAMMOND, IND. . . . 518 Calumet Building  
OAKLAND 12, CALIF. . . . 1924 Broadway

### KAISER CHEMICALS BASIC REFRACTORIES FOR THE STEEL INDUSTRY:

Kaiser PERICLASE Brick (D-S)  
Kaiser PERICLASE-CHROME Brick  
Kaiser CHROME-PERICLASE Brick  
Permanente 165 Ramming Mix  
Permanente 84 Ramming Mix

## Kaiser Chemicals

Pioneers in Modern Basic Refractories

REFRACTORY BRICK & RAMMING MATERIALS • CASTABLES & MORTARS  
MAGNESITE • PERICLASE • DEADBURNED DOLOMITE • ALUMINAS



## ...new yardstick for measuring profits!

**Towmotor Mass-Handling**—moving more units faster, at lower cost—can well be the investment that promises greatest improvement in your future profits, as you face continually rising costs and a shrinking manpower pool.

Integrating Towmotor lift trucks in your departmental operations lets you *supplement* your personnel without adding to your payroll. Enables your men to do a bigger day's work *easier*. Sends them home  *fresher*. Permits each one to handle jobs you'd pay a *crew* to do!

Have you seen the new Towmotor lift trucks lately? They offer a wealth of "first-time" features such as:

- Fatigue-free adjustable seating
- Motion-saving "centralized control"
- Maximum free lift that tops all

- No-loss hydraulic lifting action
- Power steering that saves 80% of operator's efforts

Get Bulletin SP-23 on new Towmotor lift trucks from Towmotor Corporation, Cleveland 10, Ohio.

**Leaders for 38 years in building Fork Lift Trucks, Tractors and Carriers**



Gerlinger Carrier Company, Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland 10, Ohio



**JUST PUBLISHED!**

*New 24-page brochure  
gives complete  
engineering data*

## Here's the story of **fatigue-proof** steel bars

MADE BY THE **e.t.d.** PROCESS

*Elevated Temperature Drawing*

*a new material—made by  
a new process—with  
a new combination of properties*

**High Strength  
Free Machining  
Uniformity  
Fatigue Resistance  
Wear Resistance  
Dimensional Stability  
Plus Accuracy, Smooth Finish, and Straightness**

*Use this coupon to request your copy*

*T. M.—Trade-marks of La Salle Steel Company*

**La Salle** STEEL CO.

1436 150th Street  
Hammond, Indiana



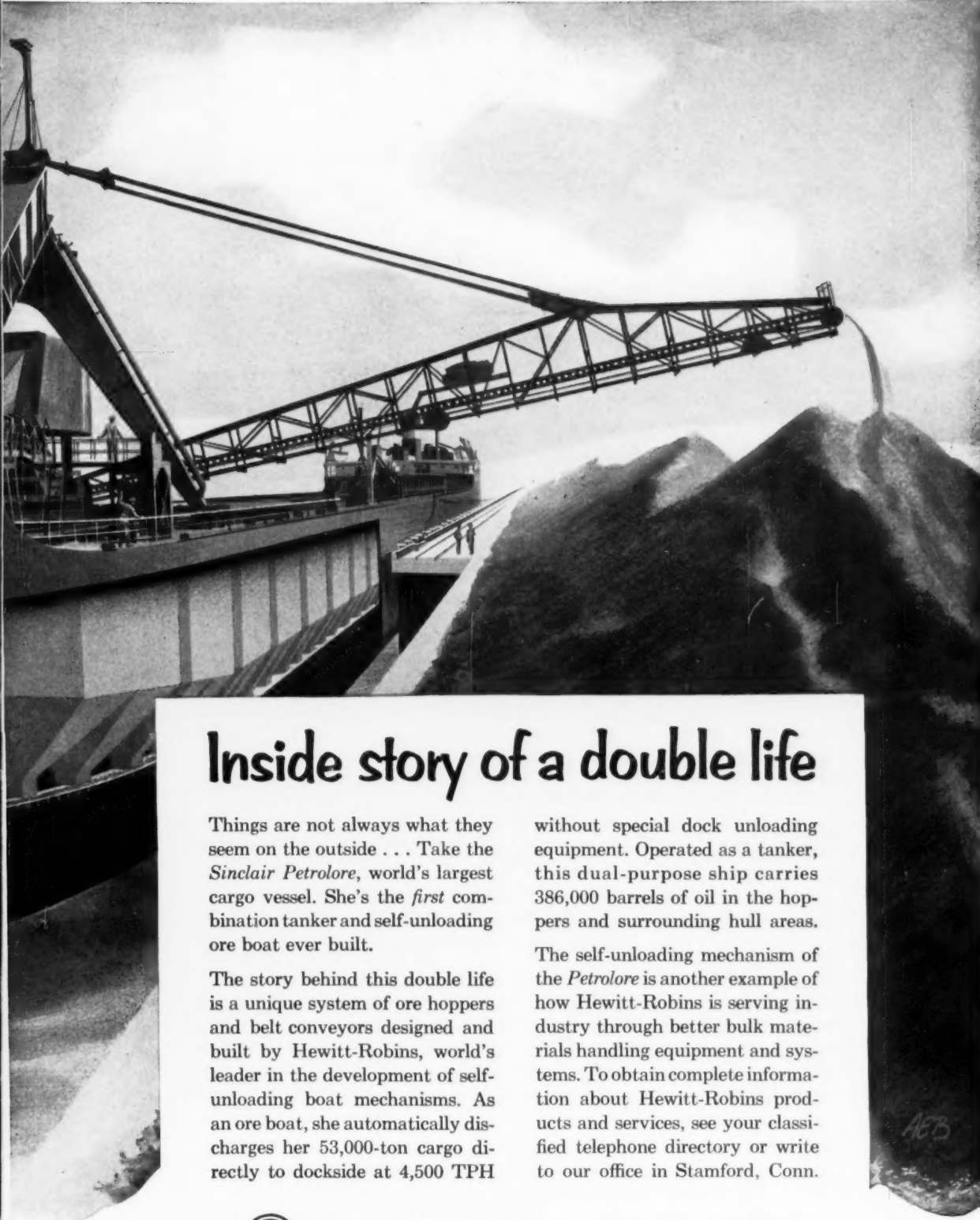
*Please send me your new 24-page brochure, "A New Material"*

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



VIBRATING EQUIPMENT • CONVEYOR BELTING AND MACHINERY • INDUSTRIAL HOSE • DESIGN ENGINEERING,





## Inside story of a double life

Things are not always what they seem on the outside . . . Take the *Sinclair Petrolore*, world's largest cargo vessel. She's the *first* combination tanker and self-unloading ore boat ever built.

The story behind this double life is a unique system of ore hoppers and belt conveyors designed and built by Hewitt-Robins, world's leader in the development of self-unloading boat mechanisms. As an ore boat, she automatically discharges her 53,000-ton cargo directly to dockside at 4,500 TPH

without special dock unloading equipment. Operated as a tanker, this dual-purpose ship carries 386,000 barrels of oil in the hoppers and surrounding hull areas.

The self-unloading mechanism of the *Petrolore* is another example of how Hewitt-Robins is serving industry through better bulk materials handling equipment and systems. To obtain complete information about Hewitt-Robins products and services, see your classified telephone directory or write to our office in Stamford, Conn.



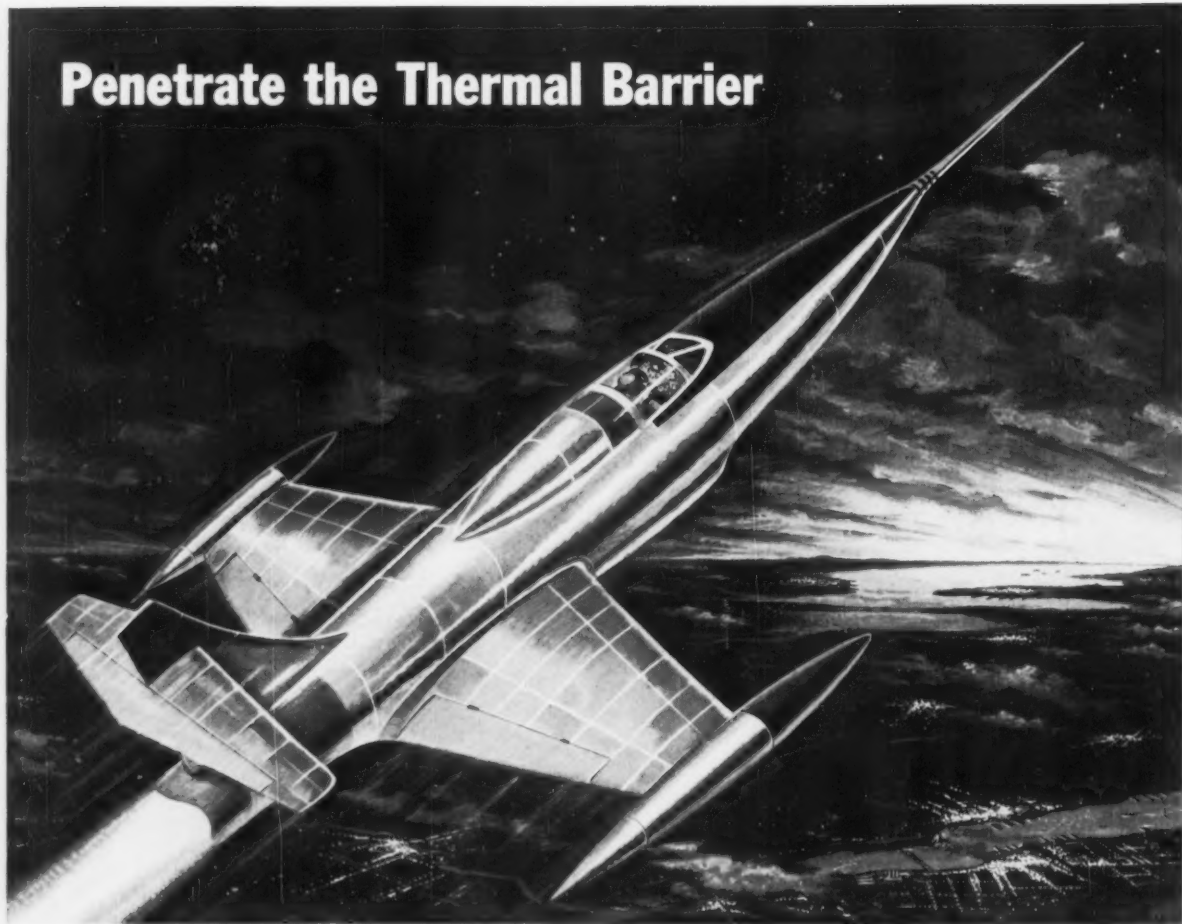
# HEWITT-ROBINS

MANUFACTURE AND ERECTION OF BULK MATERIALS HANDLING SYSTEMS • JONES POWER TRANSMISSION EQUIPMENT

January 3, 1957

105

## Penetrate the Thermal Barrier



### *MicroMach* extra-high-tensile stainless steel sheets up to **48" WIDE** for aircraft and missile use

As the speed of today's aircraft rapidly approaches the Thermal Barrier, conventional metals are being left far behind in the race to satisfy the structural requirements of supersonic craft. Needed are metals that can withstand the intense heat caused by air friction at high speeds and still retain their strength. One such metal, MicroMach stainless, has been in use for more than a year.

MicroMach is a special aircraft and missile

grade of modified type 301 stainless steel sheet furnished to higher mechanical properties than are available in other commercial high tensile grades in the full hard condition.

These sheets are rolled to extremely close tolerances (as low as plus or minus 3%) with micro-accuracy and precise uniformity of gauge. The surface of MicroMach sheet is smooth, clean and dense; qualities so important in minimizing surface friction.

*For further information write to Aircraft Steels Dept.*

**Washington Steel Corporation**

1-L WOODLAND AVENUE  
WASHINGTON, PA.



MicroRold stainless steel is also available in all popular grades and to meet regular government specifications. Sheets up to 36" wide can be had as thin as .005", and over 36" to 48" wide as thin as .010" in all commercial finishes and tempers.

# IDEALARC

by Lincoln

## 250 amp AC/DC arc welder

Both DC and AC  
welding current  
for the shop with only  
single phase power

### DC for Versatility

welds mild and low-alloy, high-tensile  
steels, stainless, aluminum, bronze.

### AC for Speed

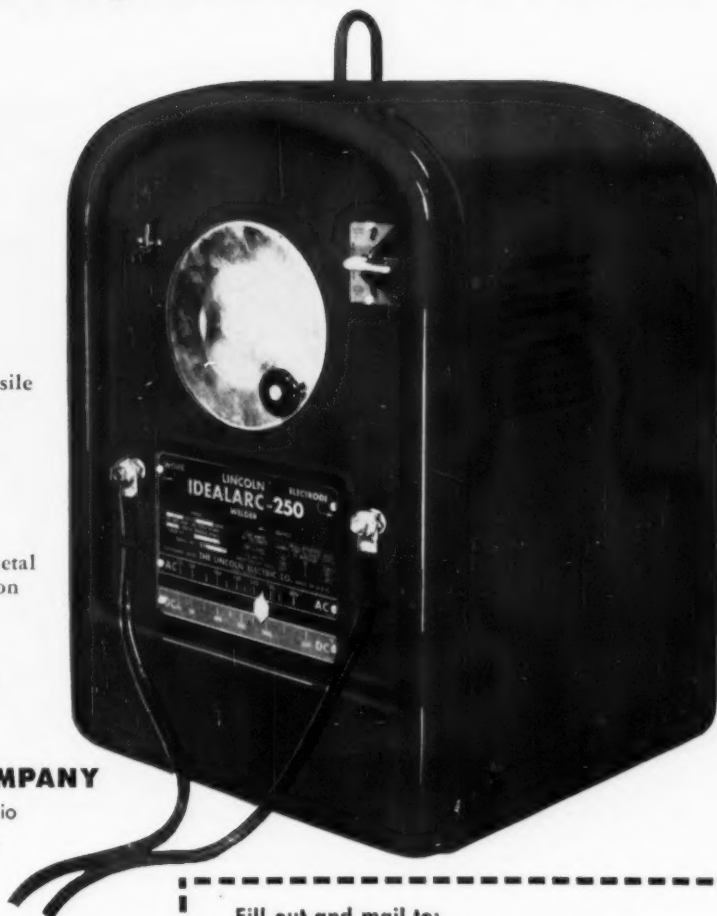
with iron-powder electrodes and  
where arc blow exists.

### DC for Easy Operation

with choice of polarity for sheet metal  
... for downhand or out-of-position  
welding.

### AC/DC at Low Cost

for a price comparable to straight  
DC machines.



### THE LINCOLN ELECTRIC COMPANY

Dept. 1824 • Cleveland 17, Ohio

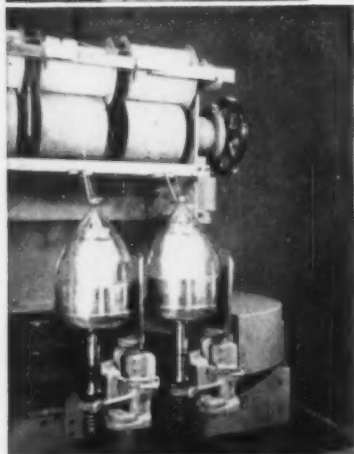
*The World's Largest Manufacturer  
of Arc Welding Equipment*



SEND FOR  
BULLETIN SB-1364  
giving specifications.

Fill out and mail to:  
THE LINCOLN ELECTRIC COMPANY  
Dept. 1527, Cleveland 17, Ohio  
Send Bulletin SB-1364 on IDEALARC.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Position \_\_\_\_\_



## Wherever you want to protect something ... that's a place for A-L Stainless Steel



Write for your copy of  
**"STAINLESS STEEL IN  
PRODUCT DESIGN"**

40 pages of useful engineering and fabricating data, including practical examples showing where, when and how stainless steel improves design, adds benefits, helps sales.

ADDRESS DEPT. A-85

In a textile plant, like the applications pictured above, Allegheny Ludlum Stainless Steel protects against off-colors in the dyeing and finishing department because it cleans up easily and quickly from batch to batch, leaving no traces of the previous dyes. In yarn twistors and other equipment in the weaving department, A-L Stainless provides the hard, smooth surface and high abrasion-resistance that protects against snagging and binding.

Food, beverage, dairy, drug and chemical plants use A-L Stainless Steel to protect the purity of their products; hospitals, hotels and restaurants use it to

protect appearance and sanitary standards; cars, trains and planes use it to protect strength and safety. And they all gain a host of bonus benefits from stainless steel, too: such as far less cleaning and maintenance expense, far longer life in service, and far greater economy in the long run.

No other metal can match stainless steel in these qualities. In addition, A-L Stainless is easy to fabricate and we produce it in every form or shape that you may require.

• Let us help you to profit by it. Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.

For Stainless Steel in ALL Forms—call  
**Allegheny Ludlum**

Warehouse stocks carried by all Ryerson Steel plants





# Now—TO BETTER SERVE YOUR ROLL REQUIREMENTS



On January 1, National Roll & Foundry became an operating division of General Steel Castings Corporation.

National Roll now offers its customers the additional benefits and services made possible by this closer relationship with General Steel Castings—its many years of specialized foundry experience, and its capable

staffs of engineering and production specialists.

We are sure old friends, whose companies we have served for many years, and the new friends we hope to meet and serve in the future, will find National Roll & Foundry better equipped to better serve their roll and casting requirements.

## GENERAL STEEL CASTINGS CORPORATION

### NATIONAL ROLL & FOUNDRY DIVISION

Avonmore (Westmoreland County) Pennsylvania

General Steel Castings Corporation: General Offices, Granite City, Ill. • Plants: Granite City, Ill.—Eddystone, Pa.—Avonmore, Pa.

You wouldn't tolerate low voltage, but—

## Do you have Full Air Pressure?

**Every pound below design pressure  
drops air tool performance nearly 2%**

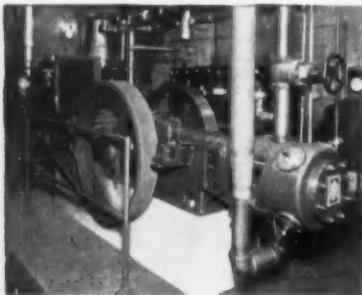


*Perhaps an Ingersoll-Rand ES Compressor will  
build your Air Power System to full capacity*

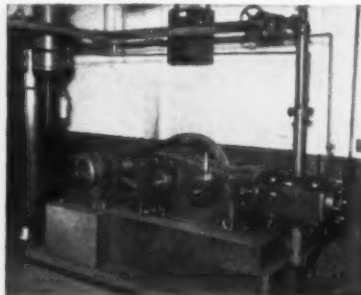
Modern, time-saving, labor-aiding air tools are designed to operate at a working pressure of 90 pounds. As the pressure falls off, so does the performance of the tool. Studies have shown that by increasing air pressure *at the tool* from 70 psi to 90 psi, you can increase the available power of the average air tool by 37%. This means a big increase in productivity—big savings in time and cost.

If your increased usage of compressed air has outstripped compressor capacity, an additional heavy-duty ES compressor will be a highly profitable investment. Your Ingersoll-Rand representative will be glad to help you make an air survey and recommend the most economical solution to the problem.

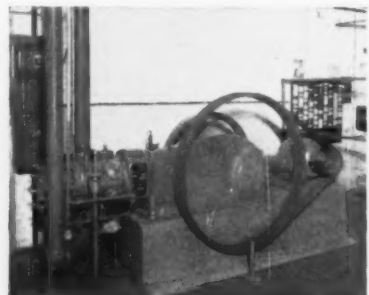
Keep production going...use Ingersoll-Rand air tools and keep pressure up with Ingersoll-Rand compressors.



This Class ES compressor provides 100 psi air for operating air tools in the foundry and machine shop of a large manufacturing company.



For more than 15 years, this ES compressor has been providing a dependable supply of air at 100 psi for general plant service in an Eastern metal products factory.



Air tools used in a large woodworking plant are operated at top efficiency by the heavy-duty ES compressor shown above, delivering air at 100 psi.

Only I-R compressors have CHANNEL VALVES



Known for high efficiency, quiet operation and durability. Entirely different. Each valve is a combination of rigid stainless-steel channels and leaf springs, with trapped-air spaces which cushion action.

# Ingersoll-Rand

1-439

11 Broadway, New York 4, N. Y.

COMPRESSORS • GAS AND DIESEL ENGINES • ROCK DRILLS • PUMPS • TURBO-BLOWERS • AIR AND ELECTRIC TOOLS

**MELTRITE**  
PIG IRON

**STRICTLY  
MERCHANT**

Meltrite is strictly a merchant pig iron. Its entire production is for sale at all times.

Always in dependable supply.



SERVICE DEPARTMENT  
AVAILABLE WITHOUT OBLIGATION

**PICKANDS MATHER & CO.**  
CLEVELAND 14, OHIO

Chicago • Cincinnati • Detroit • Duluth • Erie  
Greensboro • St. Louis • Washington

*Serving Industry Since 1883*  
IRON ORE • PIG IRON • COAL • COKE • FERROALLOYS

# Now... KENDEX\* boring bars

bring all the advantages  
of the Kendex principle  
to turret lathe boring operations

Exhaustive tests on different turret lathes\*\* prove that Kendex Boring Bars provide all the benefits and economies of the Kendex principle now enjoyed in turning, facing, and milling operations. In addition, and probably more important in boring operations, Kendex Boring Bars provide the following advantages over other types of bars:

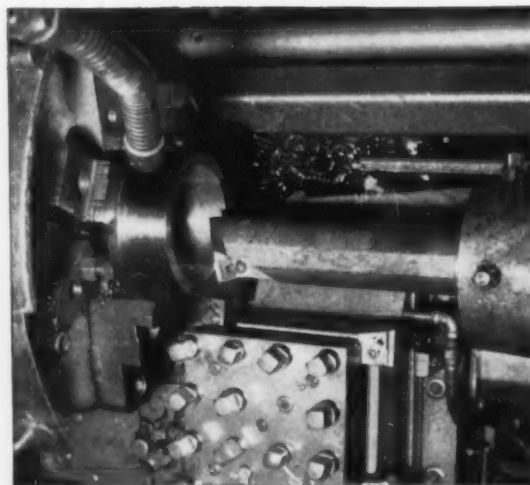
- the cutting point is brought down to the center line of the bar
- greater support of the cutting edge is provided
- better chip control (uses standard Kendex chipbreaker plate)
- boring operations performed better at higher speeds made possible with Kendex bar
- permits use of thin insert—greater resistance to thermal shock
- throw-away insert permits use of harder grades—greater resistance to edge wear at higher speeds
- cutting inserts index accurately (saves time on size adjustment)—less downtime

Kendex Boring Bars, with the right grade of "throw-away" Kennametal\* insert, can be used for both rough and finish boring of pieces up to several inches in diameter. The bar with 15-degree lead angle and square insert together with the bar for turning to a square shoulder with a triangular insert will take care of practically all boring operations—thus eliminating the need for a variety of styles.

Why not call your Kennametal tool engineer to demonstrate these new Kendex bars? He will also help you select the right grade of Kennametal insert for each boring operation. Or write for additional information, KENNAMETAL INC., Latrobe, Pennsylvania.

\*Trademarks

\*\*Tests made on Warner-Swasey, Jones & Lamson, Gisholt and other turret lathes

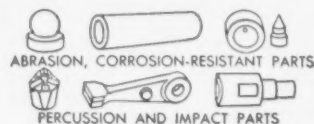


Kendex Boring Bars for Turret Lathes with Kennametal "throw-away" inserts . . . eliminate costly grinding . . . index accurately without re-setting tool . . . reduce machine downtime . . . slash cost per cutting edge . . . resist thermal shock . . . permit boring to close tolerances . . . better chip control (chipbreaker not shown in illustration at top of page)

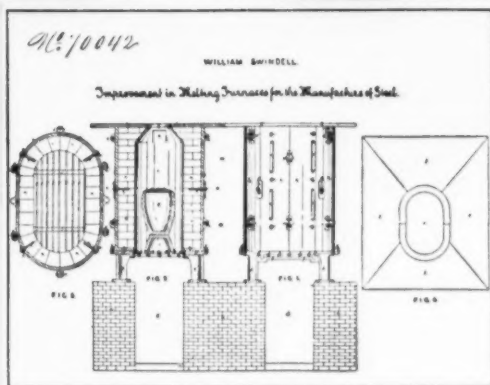
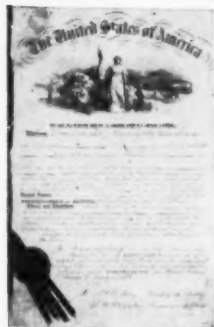
C-3003



INDUSTRY AND  
**KENAMETAL**  
...Partners in Progress







An early patent (No. 70,042 U.S. Patent Office) granted to Mr. William Swindell for an improved crucible furnace, for the melting of steel.

## OVER 105 YEARS ...of knowing how

Today's SWINDELL Electric Melting Furnaces, employing the most advanced construction and operating features, reflect in their performance a continuity of steel-melting knowledge and experience extending over 105 years. In fact, a very large American steel producer has been our customer for 103 years. • *Knowing how* is one of the two great qualities in SWINDELL furnace production. The other is integrity. • Let us consult with you.

# SWINDELL

## ELECTRIC MELTING FURNACES



### SWINDELL-DRESSLER CORP.

DESIGNERS AND BUILDERS OF  
MODERN INDUSTRIAL FURNACES  
Pittsburgh, Pa.

ORIGINAL SELLERS\*



Do heating coils in your vapor degreaser often get gummed up like this? You may be using a degreasing solvent that's poorly stabilized. Read below how you can minimize this coil-cleaning job, and degrease more parts between cleanouts.

## Why Nialk® TRICHLORethylene with **psp** gives you more degreasing, less downtime

Cut your degreasing costs with this permanently stabilized solvent

It's the *stabilizer* in the trichlorethylene that determines how long you can use it safely and efficiently.

Light, heat, air, acids, and active metals such as aluminum, given time, can break down improperly stabilized trichlorethylene, making it unfit for further degreasing.

### Only Nialk

TRICHLORethylene has **psp**. The stabilizer in NIALK TRICHLORethylene has **psp**—permanent *stay-ing* power. It's neutral, non-alkaline. You *never* have to replenish it.

Only NIALK has this *permanent staying power*. Even after repeated distillations, its unique stabilizer prevents acid formation and other causes of breakdown.

NIALK works equally well with *all* metals.

### **psp** means cheaper degreasing—here's why

You don't have to clean out your degreaser nearly so often with NIALK TRICHLORethylene. You can degrease many more parts between cleanouts.

The NIALK stabilizer actively retards formation of degradation products in your degreaser. Cleanouts are easier, faster.

### Get proof of Nialk's cheaper, safer cleaning

See for yourself how NIALK TRICHLORethylene with **psp** stays stable, keeps cleaning efficiently long after other solvents have lost their punch. Write on your business letterhead for a revealing resumé of comparative metallurgical tests on five leading brands.



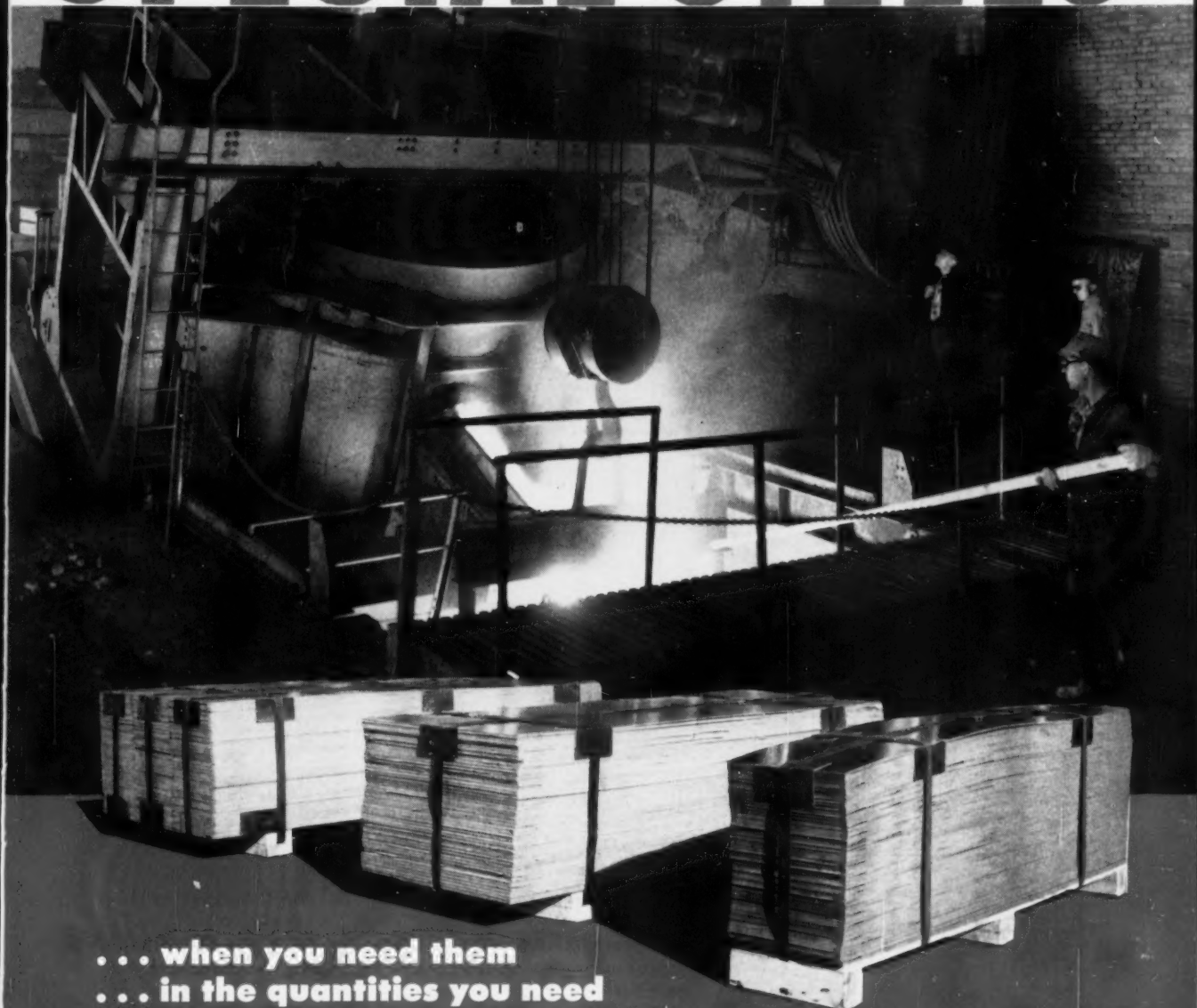
### HOOKER ELECTROCHEMICAL COMPANY

301 UNION STREET, NIAGARA FALLS, N. Y.

NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES

Manufacturers of VIRGO® DESCALING SALT, VIRGO ELECTROLYTIC SALT, VIRGO MOLTEN CLEANER

# SPECIAL STEELS\*



... when you need them  
... in the quantities you need  
... of quality you can depend on

*from centrally located* **Ingersoll Steel**

When service counts, you can count on Ingersoll for a wide variety of special purpose steels.\* Being a specialty mill, Ingersoll offers great flexibility in production scheduling, set up to fit your own requirements. Ingersoll's advantageous location at New Castle, Indiana assures prompt

deliveries. And Ingersoll's modern quality-control facilities mean dependably uniform high quality from one order to the next. On all these counts, it will profit you to consult Ingersoll—a good name to know, a good place to go for the special steels you need.

\* stainless steels • heat resisting steels • ingAnod stainless-clad sheets  
alloy steels • forging quality electric steel ingots • automotive clutch  
plate steels • Tom-Cross cross-rolled steel • carbon electric steel for  
tractor clutch discs • knife steels • saw steels • high speed hock saw  
steels • soft center and other agricultural steels • special analysis steels



**Ingersoll** STEEL DIVISION  
Borg-Warner Corporation  
New Castle, Indiana

T.M.

Background: Unretouched photomicrograph of grain structure of 4140 alloy steel, normalized and tempered, produced and spun at Acipco. Magnification 200X.

A Better Pattern  
For Your Designs...

**ACIPCO**

Centrifugally Spun **STEEL TUBES**

This photomicrograph of the grain structure of the Acipco steel tube shows why parts made from these quality tubes are both easier to make and more economical to use.

Because it is centrifugally spun, the Acipco steel tube grain structure is more even, more dense, and more free from inclusions. This non-directional granular pattern means easier machining, greater strength, and greater durability in any design.

Non-directional grain structure is only one of the advantages you get when you specify and use Acipco Steel Tubes. If you manufacture or design products requiring tubular steel, write or call for full information about Acipco steel tube applications in your field.

**SIZE RANGE:** Lengths up to 16' — longer lengths by welding tubes together. OD's from 2.25" to 50"; wall thicknesses from .25" to 4".

**ANALYSES:** All alloy grades in steel and cast iron, including heat and corrosion resistant stainless steels; plain carbon grades and special non-standard analyses.

**FURNISHED:** As cast, rough machined, or finish machined, including honing.



**DISTRIBUTORS**

Austin-Hastings Co., Inc.  
226 Binney St.  
Cambridge 42, Mass.

Peter A. Frasse and Co., Inc.  
17 Grand St.  
New York 13, N. Y.

Lyman Tube & Bearings, Ltd.  
920 Ste. Sophie Lane  
Montreal 3, Canada

Vinson Steel & Aluminum Co.  
4606 Singleton Blvd.  
Dallas 7, Texas

J. M. Tull Metal & Supply Co.  
285 Marietta St., N. W.  
Atlanta, Ga.

C. A. Roberts Company  
2401 Twenty-fifth Avenue  
Franklin Park, Ill.

Strong, Carlisle & Hammond Co.  
1392 W. Third St.  
Cleveland 13, Ohio

Ducommun Metals & Supply Co.  
4890 So. Alameda St.  
Los Angeles 34, Calif.





## WHICH SILICON PRODUCT IS BEST FOR YOU?

Silicon is one of the most widely used of all alloying elements. And it's vitally important that the silicon product you use gives you best results for your specific application . . . at the lowest cost.

The great versatility of silicon requires its selection in the most economical form for each application. Silicon is not only a very active deoxidizer and reducing agent, but also a highly effective alloying element which confers distinctive and desirable properties on a wide range of steels and irons. In carbon and alloy steels, silicon may be used both as a deoxidizer and alloying agent. In cast irons, the element additionally acts as a strong graphitizer. In stainless and heat-resisting steels, silicon may be used also to reduce chrome-bearing slags. Silicon

plays a similarly important part in the nonferrous industry . . . in alloying . . . in the production of magnesium and other metals . . . in the manufacture of silicones.

Some silicon products are cheaper than others. But the one that *seems* cheapest may not be the best for your application . . . and can often cost you more in the long run. Our Engineering Sales and Technical Representatives have had long and varied experience in helping to select the right silicon product for thousands of jobs. There's a Vancoram silicon product for every application.

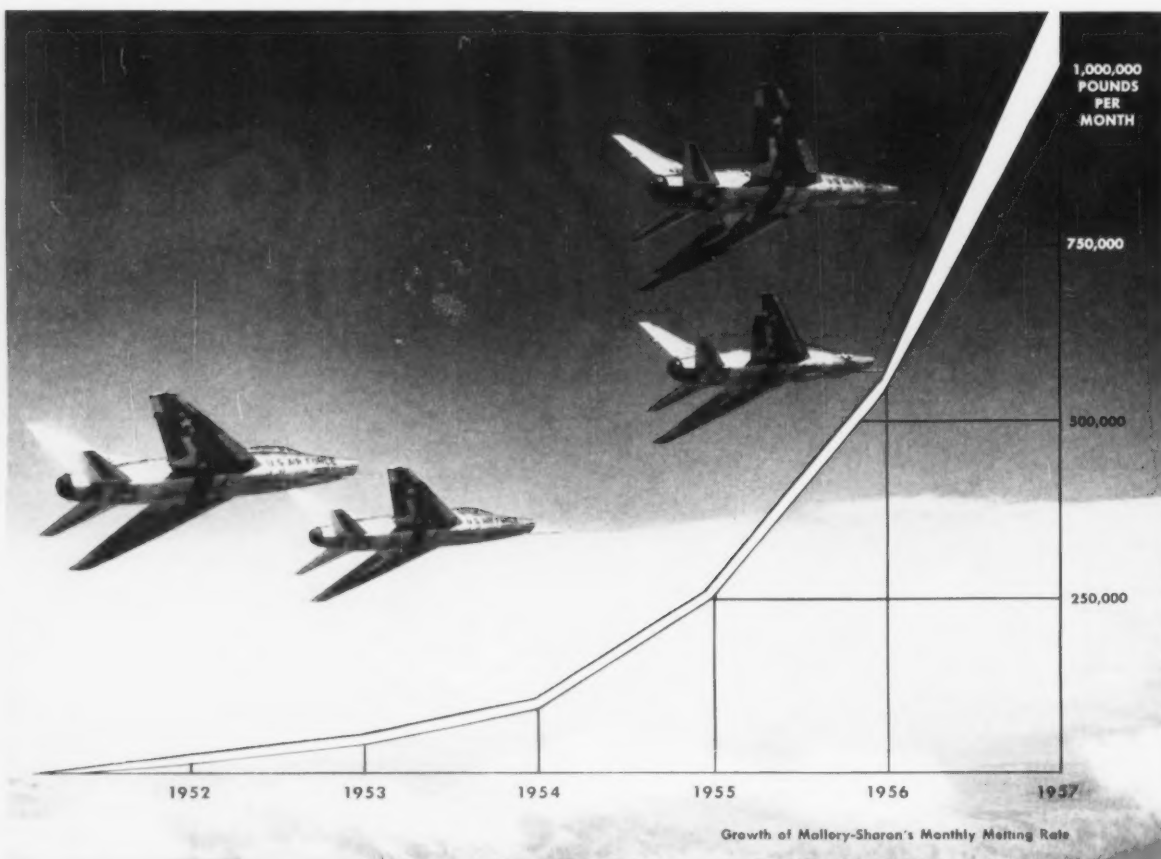
Call your nearest Vanadium Corporation Office. Our representatives will be glad to help you.

## VANADIUM CORPORATION OF AMERICA

420 Lexington Avenue, New York 17, N. Y.  
Pittsburgh • Chicago • Detroit • Cleveland



Producers of alloys,  
metals and chemicals



## TITANIUM IN 1957:

**Mallory-Sharon nears 1,000,000 pound-per-month capacity, dramatically improves quality, introduces new alloys**

- Titanium continues to be a wonder metal in its growth.

This year Mallory-Sharon, a leader in titanium mill products, will produce more than the entire titanium industry in 1955. A major plant expansion now nearing completion will boost Mallory-Sharon's melting capacity to one million pounds per month.

And this is vastly better titanium than that of two years ago, since properties of the metal are now under much better control. We certify titanium mechanical properties within definite limits. We guarantee very

low carbon content to assure the best machineability. As a result major titanium fabricators have drastically cut scrap loss, and costs.

New developments will continue to expand titanium's market. Weldable alloys, commercially introduced by Mallory-Sharon, have been proved in service. New sheet alloys, readily weldable and heat treatable to very

high strengths, are in trial production. Titanium is vital to our air superiority. And new applications of this strong, light, corrosion-resistant metal are being found each day in industry. Let Mallory-Sharon, technical leader in titanium, help you design ahead with this new metal. Write for information and application assistance.

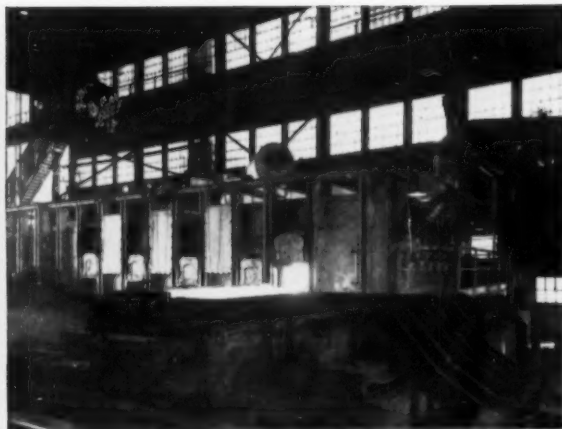
**MALLORY  SHARON**  
MALLORY-SHARON TITANIUM CORPORATION • NILES, OHIO



*Producers of titanium and titanium alloy sheet, strip, plate, rod, bar, billets*

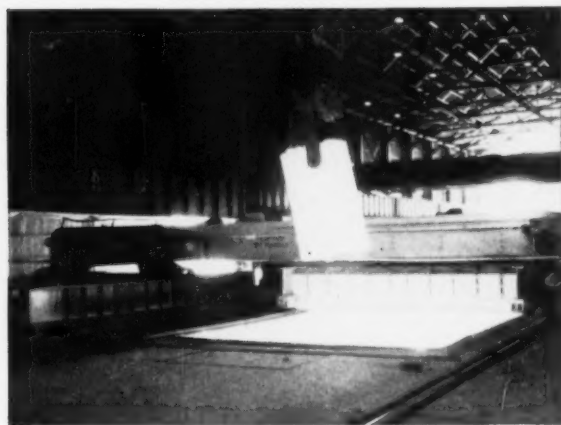


Open Hearth Furnaces—Photo Courtesy  
Jones & Laughlin Steel Corp.

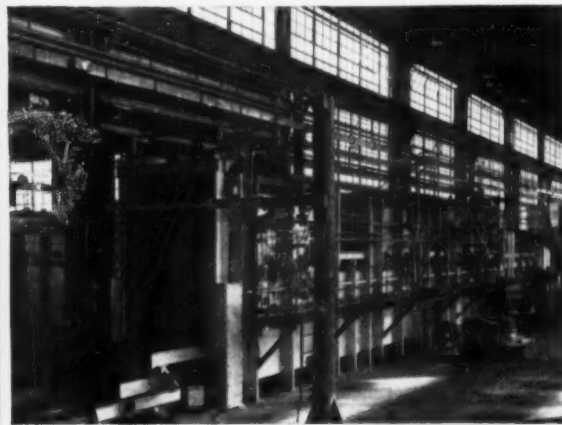


Continuous Heating Furnaces—  
Photo Courtesy Crucible Steel Co.

Soaking Pit—Photo Courtesy  
United States Steel Corp.



Heat Treating Furnace—  
Photo Courtesy Taylor Forge & Pipe Works



**Increase Production . . . Lower Production Costs with**

## **LOFTUS Industrial FURNACES**

For years Loftus Industrial Furnaces have been providing dependable, economical service to the steel industry. Their long life and efficient performance have been proved by time. The fact that they materially contribute to lower-cost operation and increased production is a matter of record.

Whatever your heating or heat-treating re-

quirements, it will pay you to take advantage of Loftus' long experience in furnace design and construction. Many of the world's leading companies have—and to their utmost satisfaction, as proved by the high percentage of repeat orders we get.

We would welcome an opportunity to quote on your requirements.

*Designers and builders of industrial furnaces*

# **LOFTUS**

*Engineering Corporation*

610 Smithfield Street, Pittsburgh 22, Pa.

56-23-3

January 3, 1957

119

# A NEW AMERICA

## TESTS ITS METAL

America 1957 is an industrial giant with swelling sinews of metal . . . metal that must be stronger, truer and more dependable than ever before. Guaranteeing this dependability is today, more than ever, a job for radiography.

Today's metalworker must find reliable sources for all his radiographic needs. And more and more metalworkers are pleased to find that 3 Ansco films cover the radiographic needs of any metal working shop.

**ANSCO SUPERAY "A"**—Fastest of all industrial x-ray films, Superay "A" will record readable images in minimum times. For example, a 6" piece of steel can be penetrated in less than 25 minutes using Cobalt-60!

**ANSCO SUPERAY "B"**—Extreme contrast and highest resolving power make Superay "B" ideal for detecting minute flaws and discontinuities.

**ANSCO SUPERAY "C"**—This high speed film makes short work of routine inspection, can give you dramatic savings in testing costs, time and labor.

Ansco offers you the best films . . . and chemicals . . . for every X-ray need. Let Ansco watch over your quality.

*America's oldest maker of photographic materials . . . . .* **Ansco**

Binghamton, New York • A Division of General Aniline & Film Corporation



# PLYMOUTH®

## Power on the rails for every job!

Here's the lineup of well-known Plymouth power in models from 3 to 70 tons . . . narrow or standard gauge . . . Gasoline or Diesel . . . mechanical or Torqomotive Drive . . . Diesel-Electrics. Records of users show Plymouth's economy, efficiency, dependability. Find out how these profit characteristics can improve your operation and cut costs.



Send brief outline of your operating needs and problems for engineering analysis and new catalogs.

Plymouth Locomotive Works Division of  
THE FATE-ROOT-HEATH COMPANY  
Dept. A-2, Plymouth, Ohio

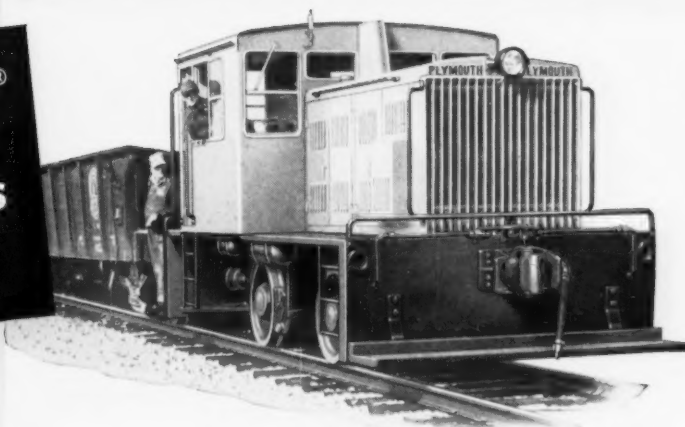
## PLYMOUTH® LOCOMOTIVES

WITH TORQOMOTIVE DRIVE

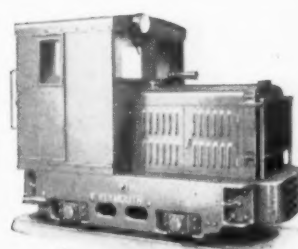


**MINE-O-MOTIVE** 5, 6, 7, 8, or 10 Tons Torqomotive® Drive. First Diesel-powered locomotive to operate in American coal mines, approved under Schedule #22, U.S. Bureau of Mines.

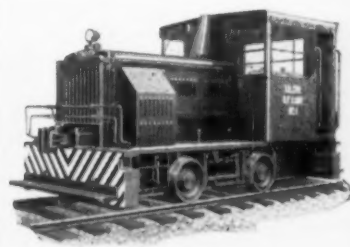
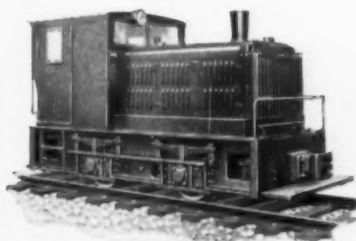
**SERIES DE**—25, 45, 50 Tons, Diesel-Electric Drive.



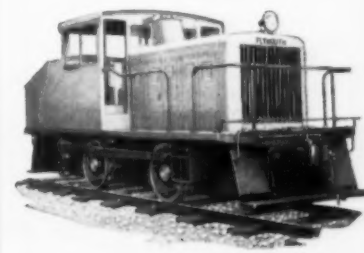
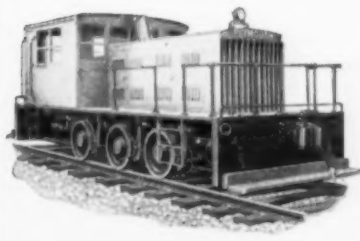
**SINCE 1914** Plymouth Locomotives have been used for heavy hauling and switching jobs. They have proven themselves in year after year service with rock bottom economy, maximum availability, minimum down time. It takes a locomotive like Plymouth, ruggedly built, with plenty of power, and torqomotive control, to solve your switching and spotting problems efficiently, economically, and for many years to come.



**SERIES R&T** (left)—3, 3½, 4 Tons, Gasoline or Diesel, Mechanical Drive, Compact for short turns, tight places. **SERIES F** (right)—5, 6 Tons, Gasoline or Diesel, Mechanical or Torqomotive® Drive. Low center of gravity, short wheelbase.

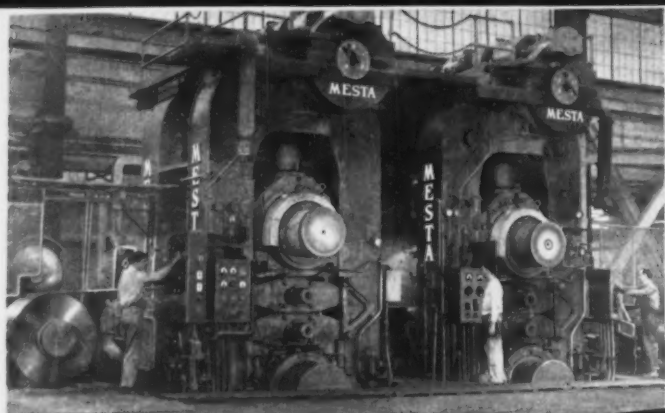


**SERIES D** (left)—8, 10 Tons, Gasoline or Diesel, Mechanical or Torqomotive Drive, Cast or Welded Frame. **SERIES J** (right)—12, 14, 16, 18, 20 Tons, Gasoline or Diesel, Mechanical or Torqomotive® Drive. 4- or 6-wheel Drive.



**SERIES M & W** (left)—25, 30, 35, 40 Tons, Gasoline or Diesel, Mechanical or Torqomotive® Drive, 4- or 6-wheel Drive. **SERIES KC & KH** (right)—45, 50, 65, 70 Tons, Mechanical or Torqomotive® Drive, Diesel only. Heaviest duty, direct drive.

\*Torqomotive Drive: Plymouth transmission coupled to automatic torque-converter.

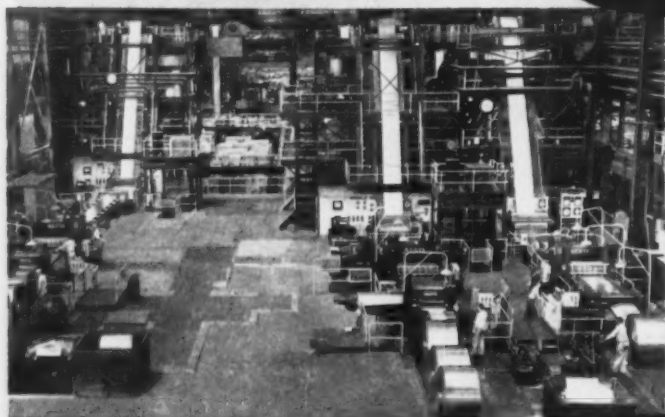


MESTA 42" FOUR-HIGH TWIN-STAND  
HIGH-SPEED SKIN PASS MILL

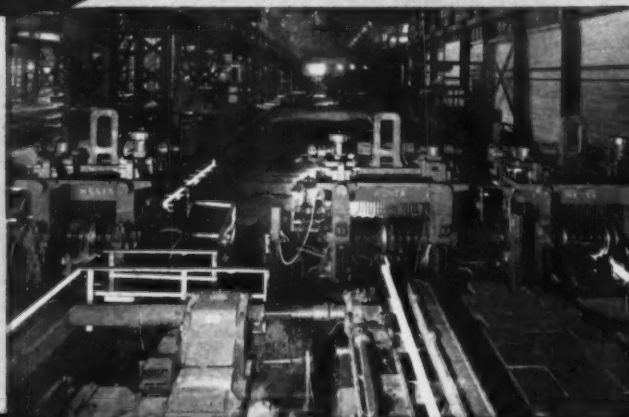


MESTA 60" CONTINUOUS PICKLING LINE WITH FLASH WELDER,  
TRIMMER AND UP-COILER OPERATING AT INLAND STEEL COMPAN

**MESTA**

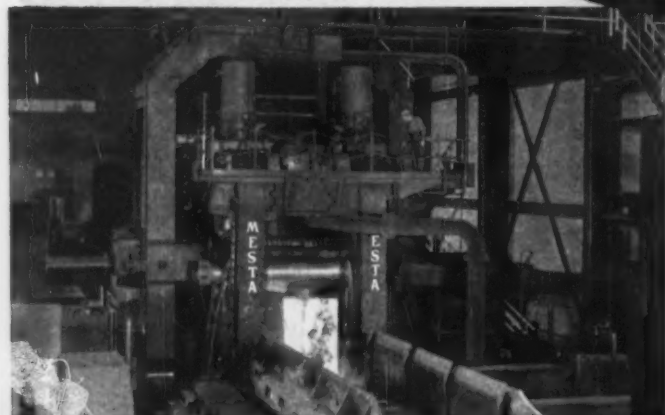


THREE MESTA 48" CONTINUOUS GALVANIZING  
LINES WITH AUXILIARY EQUIPMENT

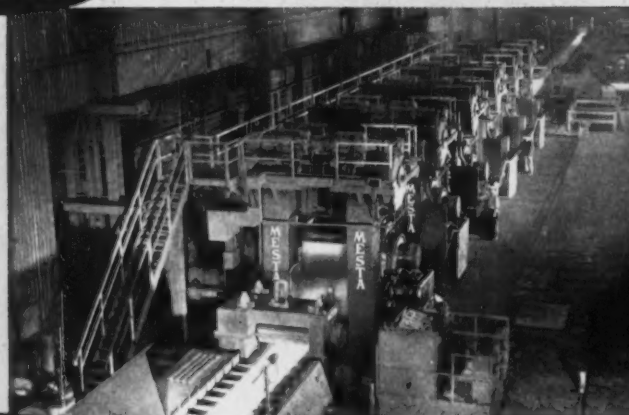


MESTA 32" BAR MILL SHOWING INTERMEDIATE  
LEADER AND FINISHING STANDS

**MESTA**

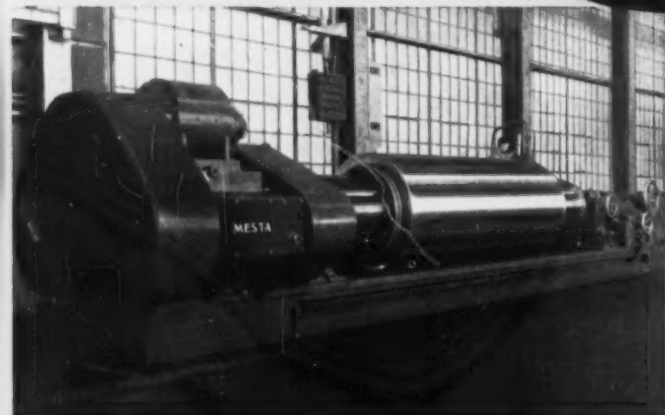


MESTA 45" x 90" UNIVERSAL REVERSING SLABbing MILL ROLLING  
20-TON INGOTS INTO SLABS AT GREAT LAKES STEEL CORPORATION



MESTA 56" FOUR-HIGH HOT STRIP MILL FINISHING STANDS  
ROLLING STAINLESS AND SILICON STEELS

**MESTA**

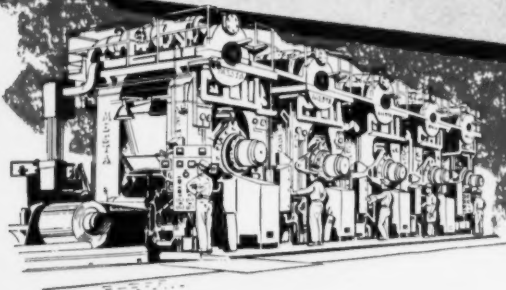


MESTA HEAVY DUTY TRAVELING WHEEL-TYPE  
ROLL GRINDER FINISHING A 59" x 154" MESTA BACKING-UP ROLL

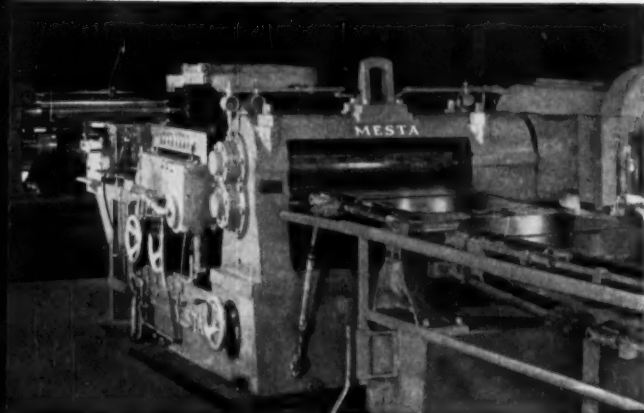


MESTA CONTINUOUS CLEANING AND ANNEALING LINE FOR TIN PLATE  
WITH PAY-OFF REEL, DOUBLE SEAM WELDER, SHEAR, AND TENSION REEL

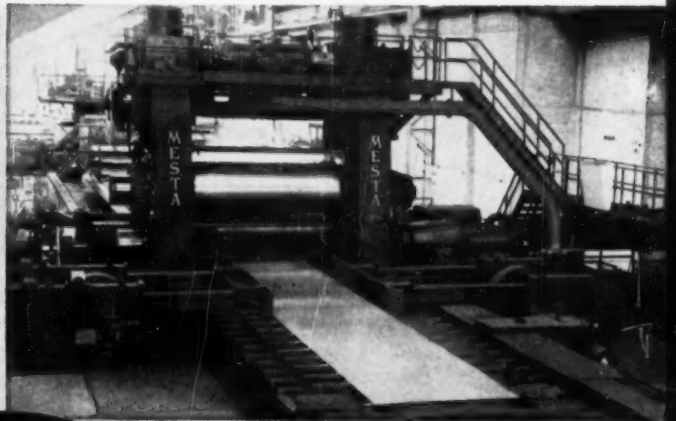
# Designed and Built by **MESTA**



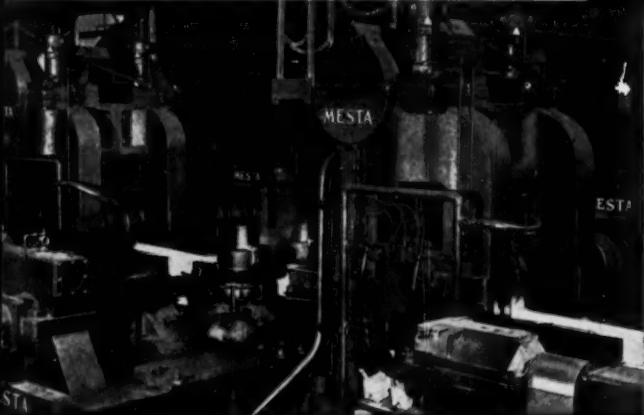
Designers and Builders of Complete Steel Plants  
**MESTA MACHINE COMPANY**  
PITTSBURGH, PENNSYLVANIA



MESTA 42" HIGH-SPEED COMBINATION ROTARY FLYING  
SHEAR AND LEVELLER WITH ROTARY SIDE TRIMMER



MESTA 132" FOUR-HIGH REVERSING PLATE MILL  
INSTALLED AT SOCIETE ANONYME COCKERILL-ONGREE, BELGIUM



TWO STANDS OF A MESTA 30" TWO-HIGH HORIZONTAL  
CONTINUOUS BILLET MILL WITH VERTICAL EDGER



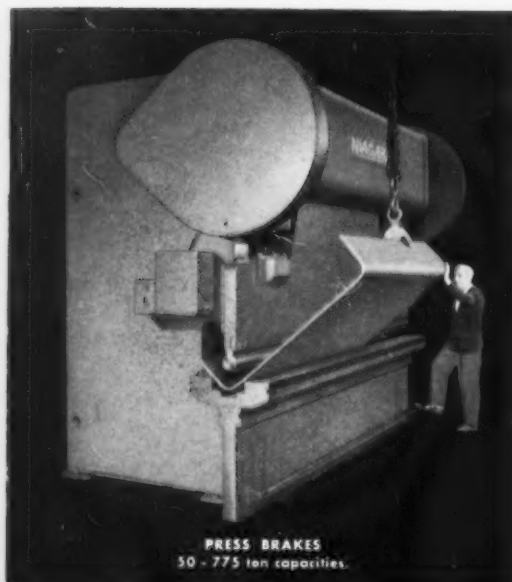
MESTA 66" FOUR-HIGH FOUR-STAND  
TANDEM COLD MILL

**MESTA**

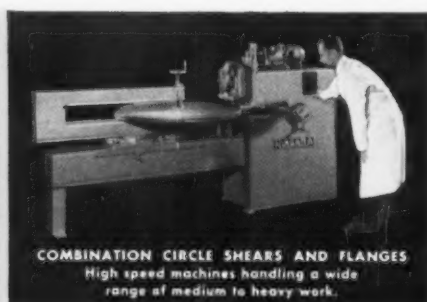


**In plate or sheet metalworking ...**

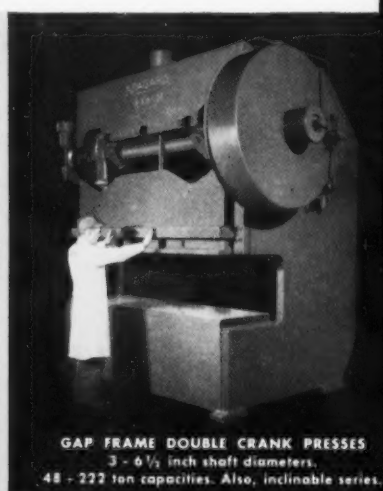
# **NIAGARA MACHINES CAN**



**PRESS BRAKES**  
50 - 775 ton capacities.



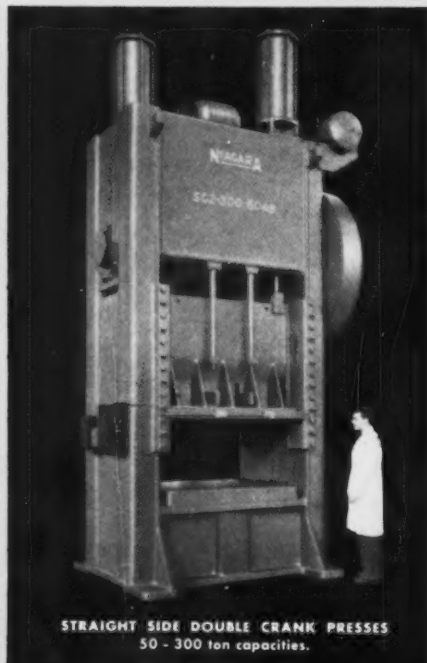
**COMBINATION CIRCLE SHEARS AND FLANGES**  
High speed machines handling a wide range of medium to heavy work.



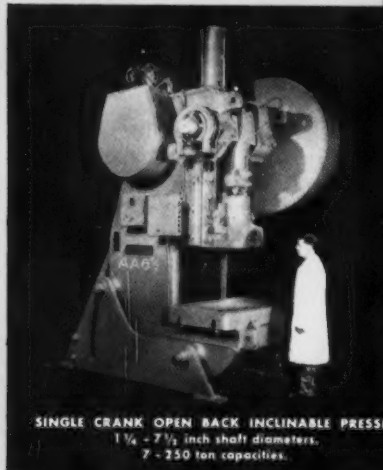
**GAP FRAME DOUBLE CRANK PRESSES**  
3 - 6 1/2 inch shaft diameters.  
48 - 222 ton capacities. Also, inclinable series.



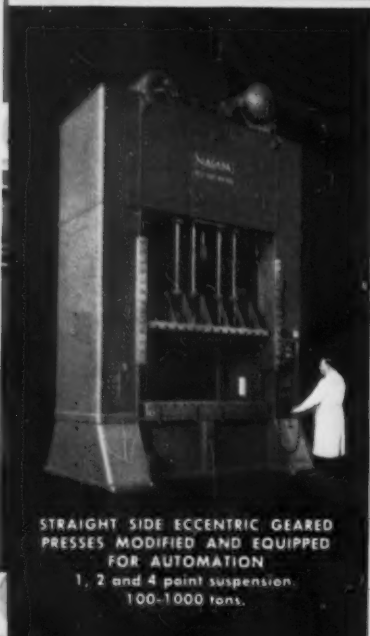
**BENDING ROLLS**  
Hand and power driven for a wide range of lengths and thicknesses.



**STRAIGHT SIDE DOUBLE CRANK PRESSES**  
50 - 300 ton capacities.



**SINGLE CRANK OPEN BACK INCLINABLE PRESSES**  
1 1/4 - 7 1/2 inch shaft diameters.  
7 - 250 ton capacities.



**STRAIGHT SIDE ECCENTRIC GEARED PRESSES MODIFIED AND EQUIPPED FOR AUTOMATION**  
1, 2 and 4 point suspension.  
100-1000 tons.



**FRONT-TO-BACK CRANKSHAFT OPEN BACK INCLINABLE PRESSES**  
Standard and automation models.  
75-200 tons.



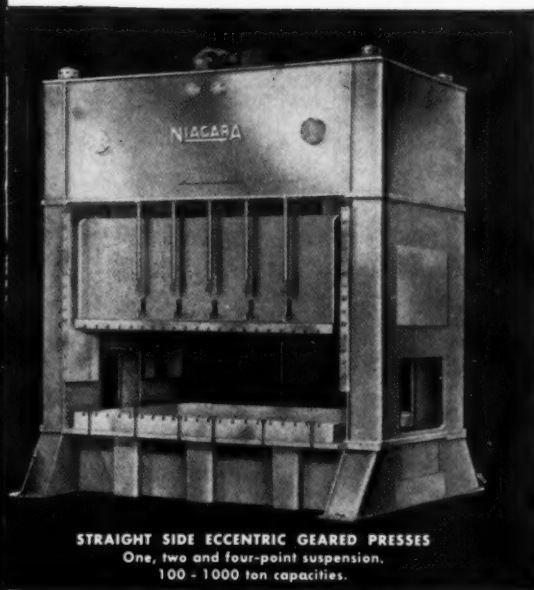
**FRONT-TO-BACK CRANKSHAFT ADJUSTABLE BED PRESSES**  
Standard and modified models.  
22-150 tons.



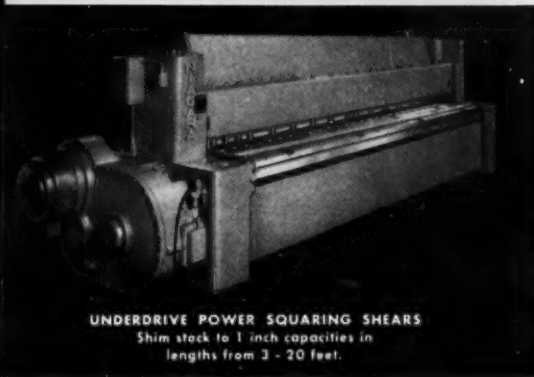
**FRONT-TO-BACK CRANKSHAFT DEEP THROAT PRESSES**  
22-150 ton capacities.



# DO THE MOST FOR YOU



**STRAIGHT SIDE ECCENTRIC GEARED PRESSES**  
One, two and four-point suspension.  
100 - 1000 ton capacities.



**UNDERDRIVE POWER SQUARING SHEARS**  
Shim stock to 1 inch capacities in  
lengths from 3 - 20 feet.

## NIAGARA

America's Most Complete Line of Presses,  
Shears, Machines and Tools  
for Plate and Sheet Metal Work

POWER PRESSES • PRESS BRAKES • POWER  
SQUARING SHEARS • ROTARY MACHINES •  
SLIP ROLL FORMERS • POWER ROTARY SHEARS  
• DRUM MAKING EQUIPMENT • ELECTRONIC  
AUTOMATIC WELDERS • GROOVERS AND  
SEAMERS • HAND OR FOOT OPERATED SHEARS  
• FOLDERS-BRAKES • LEVER SHEARS AND  
PUNCHES • HAND TOOLS

### \* MOST EXTENSIVE LINE:

From giant, power-operated machinery to small hand tools

### \* MOST ADVANCED DESIGNS:

Years ahead in performance through forward-thinking engineering

In the world's largest automotive and appliance plants or the smallest of sheet metal shops, Niagara machines and tools are usually at work "in force."

Batteries of giant presses are teamed up with speedy ring and circle shears. Massive, rugged press brakes stand side-by-side with powerful bending rolls and squaring shears. Versatile lever punches, rotary machines, groovers and seamers . . . all operate together to produce a better product at lower cost. The Niagara lines are "companion lines" of metalworking machines and tools that work together. A Niagara-equipped shop or plant is years ahead in quality and volume of production.

Whatever you require — power presses or hand tools — Niagara is the line that can do the most for you. It is the most complete in the industry . . . the most advanced in engineering. You can consult a Niagara representative with complete confidence of unbiased recommendations. Niagara has the right machines and tools for your requirements.

### BRING YOUR FILES UP-TO-DATE WITH INFORMATIVE NIAGARA BULLETINS

A diversified and extensive list of machines and tools make up the famous Niagara line. Some of the principal types are illustrated. Be sure that you have the latest data on the ones that apply to your work. At your request, specific Bulletins will be mailed promptly.



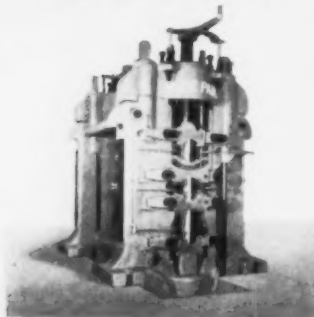
**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.**

#### DISTRICT OFFICES:

Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia  
Distributors in principal U. S. cities and major foreign countries



STRETCHER LEVELLER



18" HIGH BAR MILL



CHILLED IRON HYDRAULIC RAMS

MACHINE TOOL  
BASE PLATE



## Rolls and Rolling Mill Equipment...

For over half a century Hyde Park has built only the best. The name HYDE PARK on a Roll or on a piece of Rolling Mill Equipment is our guarantee of quality, and your assurance of high performance. Our engineers will be glad to work with you on any special roll or rolling mill equipment.

### A "RED CIRCLE" ROLL FOR EVERY PURPOSE

Alloy Iron Rolls • Grain Rolls •  
Chilled Rolls • Nickel Chilled Rolls  
• Moly Rolls • Cold Rolls • Sand  
Rolls.

### ROLLING MILL EQUIPMENT

Bar Mills • Merchant Mills • Sheet  
and Strip Mills • Pinion Stands •  
Roller Tables • Reduction Drives •  
Stretcher Levellers • Guillotine Shears  
• Sheet Mill Shears • Roll Lathes •  
Special Machinery • Machine Work

### GRAY IRON CASTINGS UP TO 80,000 LBS.



*Hyde Park*

**FOUNDRY & MACHINE CO.**

HYDE PARK, WESTMORELAND COUNTY, PITTSBURGH DISTRICT, PA.



Scott Wipers removing oil from outer races of cylindrical roller bearings, for inspection. Scott Wipers are 2-ply—welded together for greater strength—and chemically treated for excellent wet strength. Their special perf-embossed surface and high absorbency make them first choice at SKF for the toughest wiping jobs!

## **WIPER PROBLEM? Look what SKF Industries did with Scott Wipers!**

SKF Industries, Inc., Philadelphia manufacturer of anti-friction ball and roller bearings, wanted a wiping material more dependable, uniform and sanitary than rags. They switched to Scott Wipers.

SKF employees like the convenience of Scott Wipers, easy to grab from a pop-up box. They like the sanitation—and less danger of scratches from clinging foreign particles—when they use fresh, clean

Scott Wipers right out of the container.

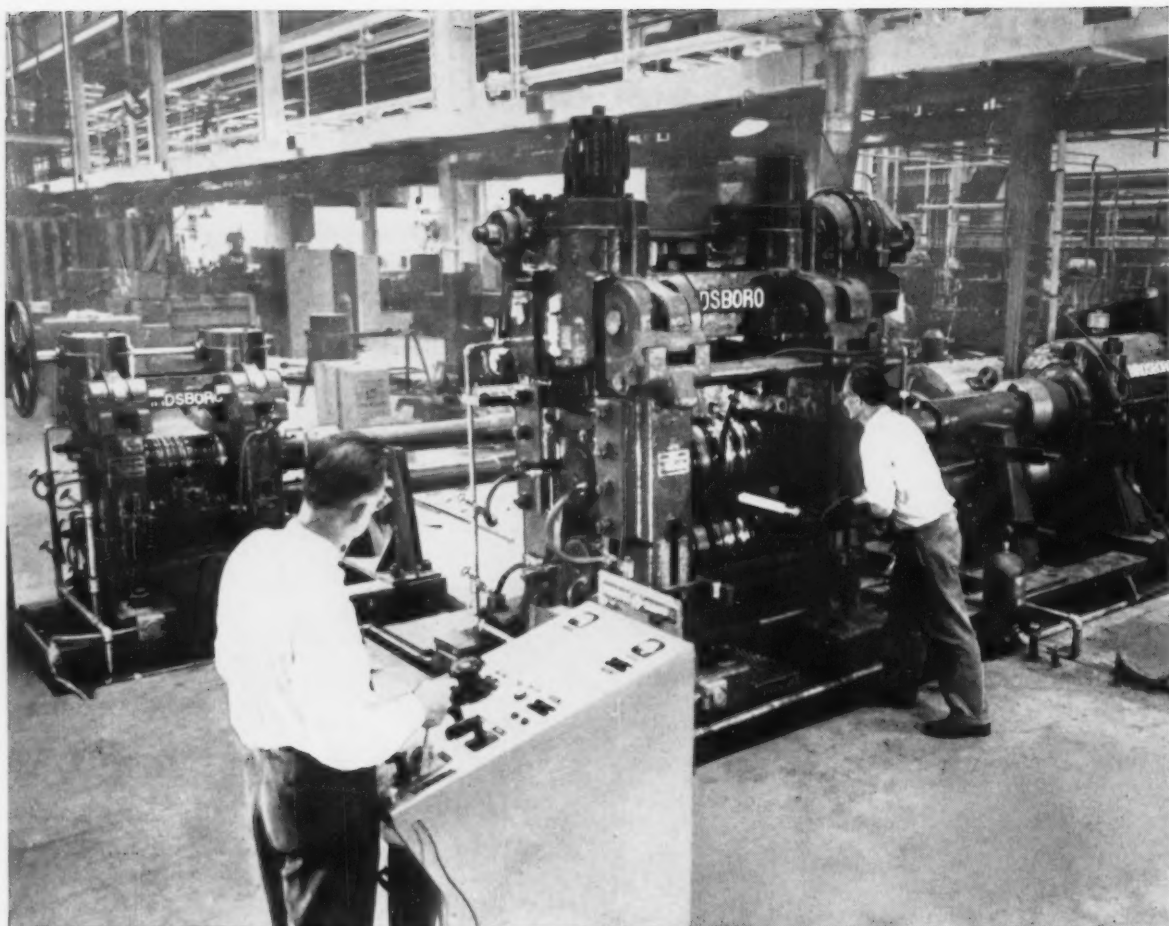
Management likes the improved housekeeping . . . no more cluttered areas with Scott Wipers so easy to dispose of! And they report that wiping material cost per productive man-hour has been reduced 42%.

Your local Scott representative or distributor will give you more facts—or write: Scott Paper Company, Department 1A-71, Chester, Pa.



## **SCOTT PAPER COMPANY**

Makers of the famous Scott paper products you use in your home. Consult your local TV schedules for Scott's program, "Father Knows Best."



## General Electric explores new areas with experimental mill by **BIRDSBORO**

● New metals are coming on the market, but only through experimentation can their capabilities be determined. In Schenectady, N.Y., General Electric has installed in its new laboratory a Birdsboro 16"-10" bar mill, designed to help scientists seek out the unknown factors of these new metals through experimentation and specialized production.

The mill features 2 stands of different pitch diameter to accommodate the large range of product size required. The 16" roughing mill includes a motorized screwdown for high speed roll setting when performing slabbing operations. It also permits use of a bull head and grooved passes to get a wide range of product with a minimum of roll changing.

Again, Birdsboro has developed a mill that not only sets the pace in design, but through expert utilization by General Electric will help in opening new fields in metals production. When extraordinary results are desired, more and more companies turn to Birdsboro . . . and it pays! For more details of Birdsboro leadership in customized mill machinery, write to:

**Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.**  
**District Office: Pittsburgh, Pa.**

**Engineering Subsidiary: Engineering Supervision Co.**  
**120 W. 42nd St., New York 36, N.Y.**

# **BIRDSBORO**

## STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES (Metalworking and Extrusion) • CRUSHING MACHINERY •  
SPECIAL MACHINERY • STEEL CASTINGS • "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel



IF  
YOU  
MAKE

# Springs

YOU'LL DO BETTER WITH ROEBLING

ROEBLING makes high carbon steel spring wire and flat spring steel...and makes it *better*...for every sort of spring and for every product that requires spring characteristics. Hard drawn, hard rolled, annealed or soft, tempered or untempered...they're all available to meet your requirements exactly.

Among these Roebbling materials are zig-zag and no-sag wires; mechanical and valve spring wires; music wire; clock and motor type spring wires; flat spring steel and upholstery spring wire of all types. The variety of parts into which these are formed is almost endless, but manufacturers all report that Roebbling quality and uniformity reduce machine downtime.

Learn for yourself how Roebbling can help your production and product. John A. Roebbling's Sons Corp., Trenton 2, N. J.



**ROEBLING** 

Subsidiary of The Colorado Fuel and Iron Corporation

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. & 5 PITTSBURGH ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 BLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODessa, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • ROCHESTER, 1 FLINT ST. • SAN FRANCISCO, 1740 19TH ST. • SEATTLE, 900 1ST AVE. S. • ST. LOUIS, 3001 DELMAR BLVD. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6, N.Y.

Another **H-VW-M** first!

## **POWERTRON GERMANIUM RECTIFIERS**

New—Completely new models, new features  
Different—No other combination like it  
Better—Revolutionary new features  
—And all this at a **NEW LOW PRICE!**

Check these  
outstanding  
H-VW-M features:

- No-fuse DC protection—an H-VW-M exclusive
- No paralleling of junctions—an H-VW-M exclusive
- High efficiency of germanium • Improved regulation of germanium
- 44 control positions, from 2 to 12 volts • Less than 5% ripple

This completely new, different, and better line of Powertron Germanium Rectifiers, built with famous H-VW-M quality for long life dependability, are something special in packaged units. If one of these models fits your plating, anodizing or cleaning requirements, then you've got a real bargain. Just look at these low prices.

Immediate delivery. Write for Catalog. **Hanson-Van Winkle-Munning Company, Matawan, New Jersey.** Offices in principal cities.

750 amperes	2-12 volts	42" h x 22" w x 20" d	<b>\$ 995.00*</b>
1500 amperes	2-12 volts	60" h x 24" w x 24" d	<b>\$1490.00*</b>
3000 amperes	2-12 volts	66" h x 33" w x 24" d	<b>\$2695.00*</b>

\* PRICES based on 440 volt 3-phase 60-cycle input.  
220 volt input slightly higher. F.O.B. Matawan.



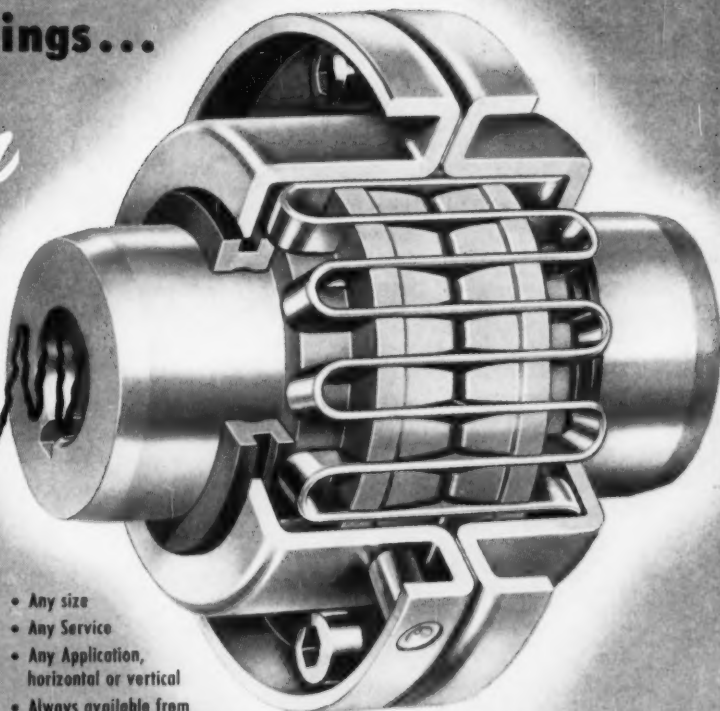
# **H-VW-M**

Industry's Workshop for the Finest in Plating, Anodizing, and Polishing Processes • Equipment • Supplies

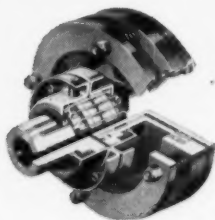
**PLATEMANSHIP**—Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

## Falk Steelflex Couplings...

*Protect your  
machinery  
in 2 ways*



- Any size
- Any Service
- Any Application, horizontal or vertical
- Always available from factory, field or distributor stocks

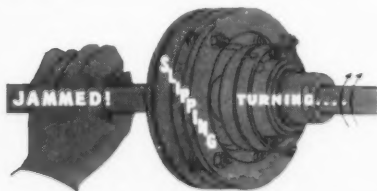


### Falk Controlled Torque Couplings prevent damage from overloads

In applications where danger from overloads exists, use the FALK Type FT Controlled Torque Coupling. The Type FT has all the features and advantages of standard FALK Steelflex couplings—and, in addition, has an adjustable friction slip clutch, enabling the operator to set the coupling to slip at any predetermined overload.

This controlled-torque principle not only prevents transmission of dangerous shocks and limits overloads; it eliminates the breaking of shafts caused by jamming of driven equipment.

An outstanding advantage of the Type FT Coupling is that, as soon as the cause of the overload is removed, the entire coupling will rotate and transmit power without replacing parts or repairing coupling.



There's real economy in using Type FT Controlled Torque Couplings. Many users have reported that these couplings paid for themselves the very first time they slipped (under overload) because of the protection against damaged driving or driven machinery!

## ...cost less per year of service!

You get *double protection* when you connect your driving and driven machinery with a Falk Steelflex Coupling—the all-steel coupling with the exclusive grid-groove design! First, its *torsional resilience* smothers shock and vibration; and second, the Steelflex design prevents damage and lowered efficiency by accommodating shaft misalignment.

Why have increasing numbers of key men in industry standardized on Falk Steelflex Couplings? Their experience has proved that Falk Steelflex Couplings prolong the service life of their machinery... are trouble-free and need minimum maintenance... are easy to install, lubricate and disconnect... and *cost less per year of service* than ordinary couplings.

One basic Steelflex design—the type F, in its many sizes—is adaptable to more than 90% of all industrial applications. For applications involving danger from overloads, Modified Type FT Controlled Torque couplings (see column at left) are ideally suited. There are numerous other special or dual purpose Steelflex couplings for unusual applications. **Write to Department 247** for engineering bulletin, including selection and dimension tables.

**THE FALK CORPORATION, MILWAUKEE, WISCONSIN**

# FALK

...a good name in industry

#### MANUFACTURERS OF:

- |                        |                        |
|------------------------|------------------------|
| • Motoredrivers        | • Single Helical Gears |
| • Speed Reducers       | • Herringbone Gears    |
| • Flexible Couplings   | • Marine Drives        |
| • Shaft Mounted Drives | • Steel Castings       |
| • High Speed Drives    | • Weldments            |
| • Special Gear Drives  | • Contract Machining   |

**19 tons of stainless...**

**all for one customer...**

**all for atomic power...**



Type 304 stainless plates abrasive cut to size and ultra-sonic tested. These plates total 19 tons and range from 1 to 6 inches thick.



...and all from  
**CARLSON**



*Q. Q.* **CARLSON, INC.**  
*Stainless Steels Exclusively*

**THORNDALE • PENNSYLVANIA**

# CYLINDER TUBING

... "mirror-finished" by Standard

Standard "mirror-finished" cylinder tubing is full-finished to use without further sizing or finishing for such applications as *automobile shock absorbers*, *power steering* and *hydraulic pumps*. When it comes to punishment, it can really take it. Every inch of this rugged tubing measures up to exacting specifications in cylinder finish . . . in ID tolerances as close as .001" . . . in extreme uniformity of wall thickness and concentricity . . . in internal pressure resistance, *tested to shocks up to 9000 p.s.i.* Cylinder sizes to 3" OD x .165" wall. For full information on Standard's complete range of products, plant facilities and engineering assistance send for *free* folder below.

- Welded Stainless Tubing and Pipe.
- Boiler and Heat Exchanger.
- Welded Carbon Steel mechanical.
- Exclusive rigidized pattern.
- Special Shapes



Shock absorber with metal-to-metal plunger in cylinder tube held to .001" ID tolerance. "Mirror-finish", concentricity and precision tolerance makes Standard cylinder-grade tubing usable *as is* for hydraulic and other cylinders.

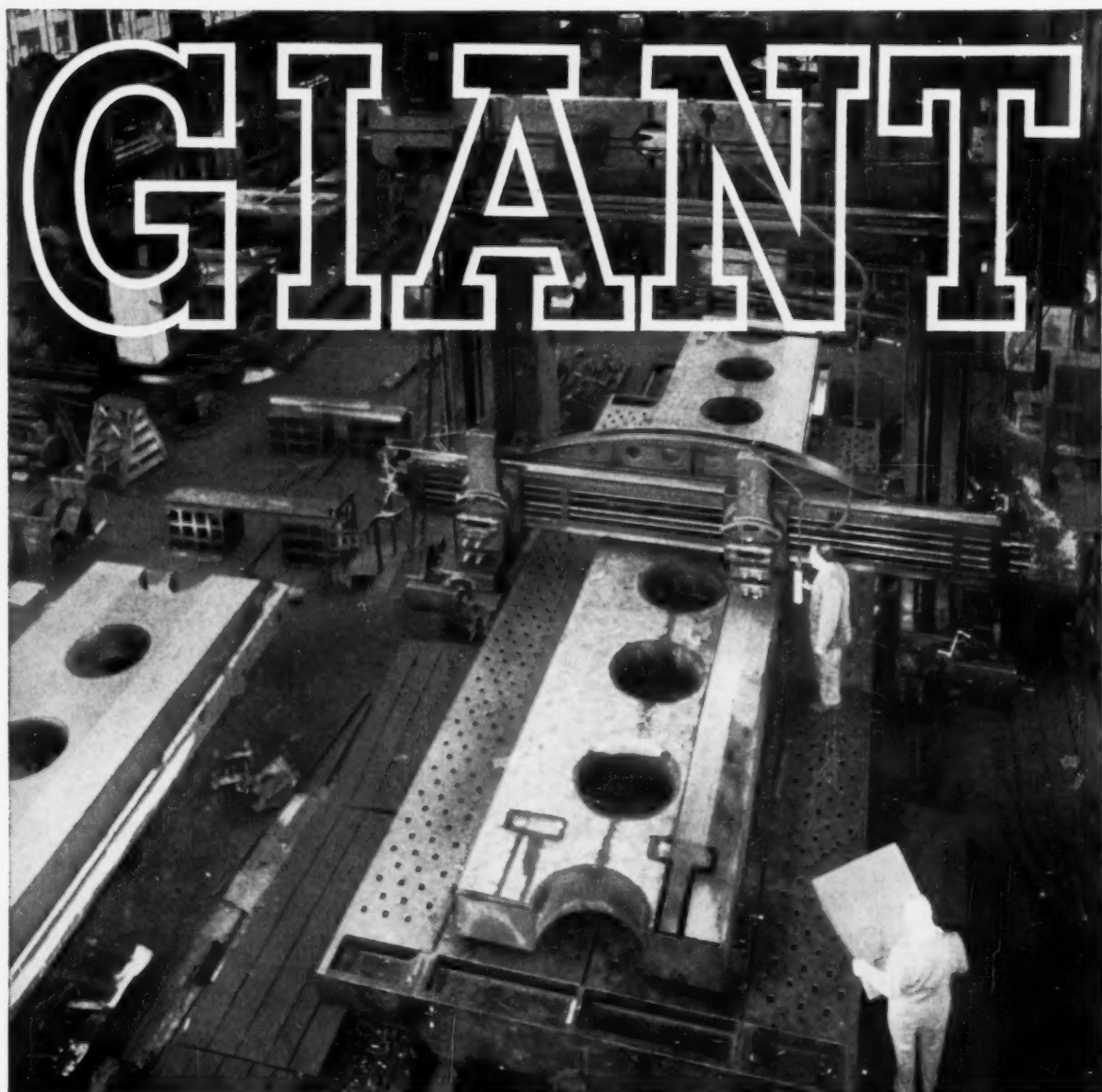


Free 8-page folder on all Standard products. Write to address below.

# STANDARD

THE STANDARD TUBE COMPANY  
24400 PLYMOUTH ROAD • DETROIT 39, MICHIGAN

Welded stainless tubing and pipe • Welded carbon steel mechanical • Boiler and Heat Exchanger  
• Exclusive rigidized patterns • Special Shapes • Steel Tubing—Sizes:  $\frac{1}{8}$ " OD to 5 $\frac{1}{2}$ " OD  
— .028 to .260 wall • Stainless—Sizes:  $\frac{1}{4}$ " OD to 4" OD— .020 to .154 wall.



## IN THE MAKING

Machining a section of a 7500-ton press. This weldment weighs 83 tons. It is shown on a 14' x 30' planer.

The machining of this huge weldment or the building of a complete machine, large or small, is a type of work regularly performed in Sun Ship's machinery plant, where *Marine and Industrial* machinery is built.

We invite discussion of your machinery problems.

# Sun

**SHIPBUILDING & DRY DOCK COMPANY**

**SINCE 1916**

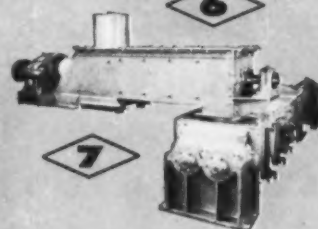
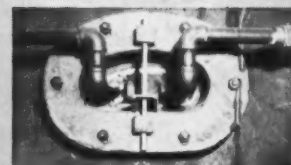
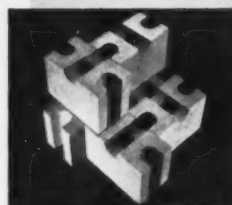
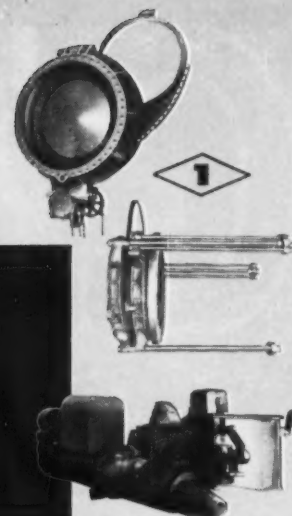
**ON THE DELAWARE • CHESTER, PA.**

**These Jobs  
are done  
more efficiently**

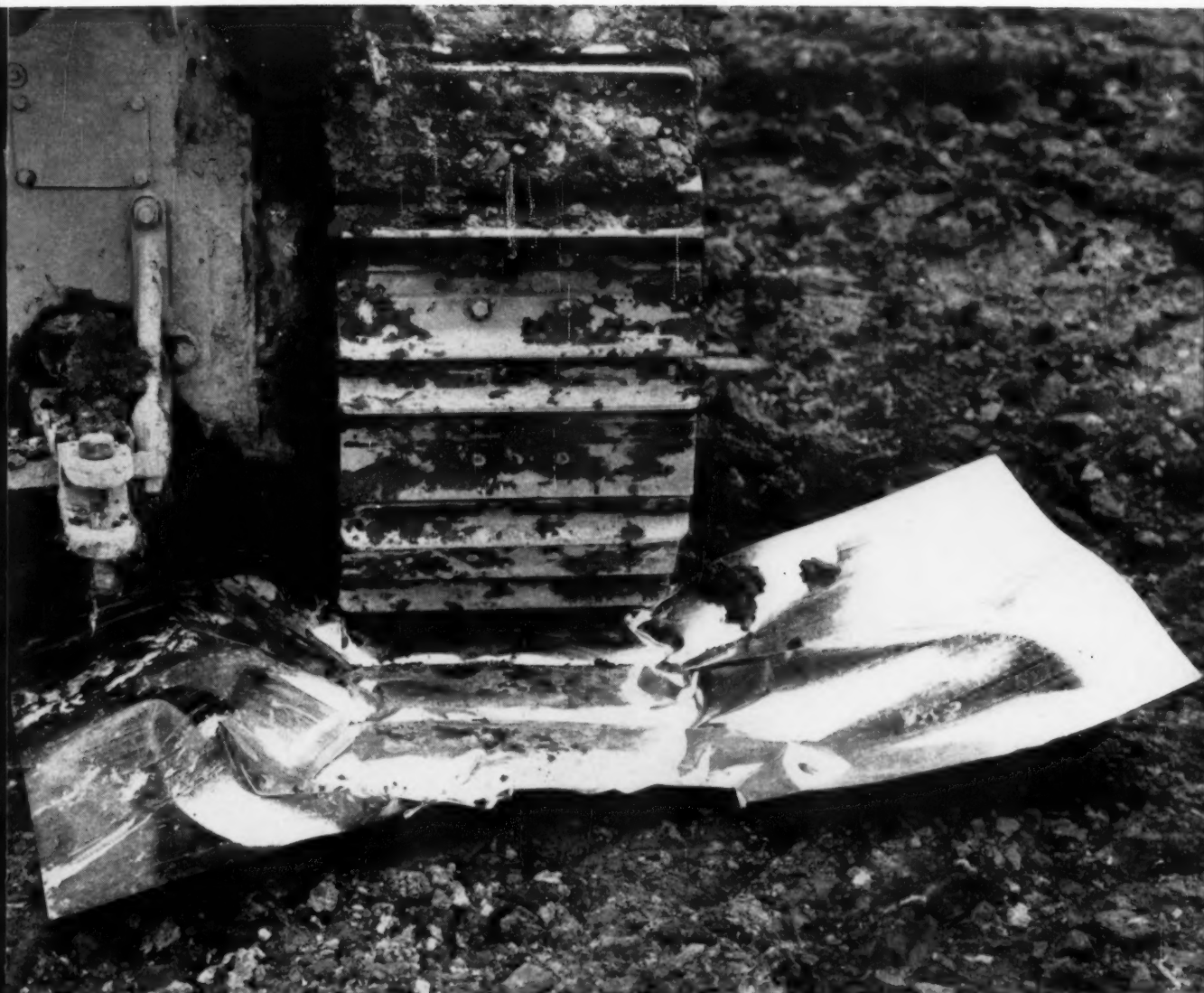
**WITH** ***Bailey*** **EQUIPMENT**

- 1** **For Controlling Gas Mains . . .** Bailey Goggle Valves in thermal expansion (36" to 120" diameters) and mechanical (6" to 72" diameters) types.
- 2** **For Plugging Tapping Holes . . .** Bailey Clay Guns provide plenty of power and clay capacity for maintaining long holes.
- 3** **For Blast Furnace Stoves . . .** Bailey services include design, construction and relining — using Kennedy Checkers with cross-flue feature.
- 4** **For Cooling Blast Furnace Linings . . .** Bailey Cooling Plate Holder provides a gas- and water-tight seal, with ease of removal for inspection or replacement.
- 5** **For Pig Casting . . .** Bailey Pig Casting Machines provide trouble-free service while increasing casting capacity for foundries and blast furnaces.
- 6** **For Stopping Cinder Notches . . .** Bailey Cinder Notch Stoppers eliminate hazards to workmen at the cinder notch.
- 7** **For Sintering . . .** Bailey Pug Mills assure efficient pugging or mixing for blast furnace dust catchers and sintering plants. Feeder illustrated for Dust Catcher Mill maintains an even flow of the material to be processed.

**Other Bailey Products:** Blast Furnace Cold Blast Valve • Blast Furnace Blow-Off Valve • Check and Snort Valve • Mixing and Check Relief Valve • Fabricated Steel Stove Bottom • Precision Table Feeder • Ladle Skulling Hook







## WE TORTURED THAT WEIRKOTE<sup>®</sup> TILL IT HURT US TO LOOK!

The heavy tractor's treads crunched into the Weirkote steel, rocked back and forth, gave Weirkote's tight zinc coating a wicked test.

It passed perfectly.

Weirkote shrugs off punishment like that—or far worse—in everyday production. Its continuous-process zinc coating goes through all the severe fabrication steps flawlessly. Spin it, deep-draw it, crimp it, roll-form or extrude it. There's no flaking or

peeling when Weirkote's on the job.

And look at this for savings! Because Weirkote's zinc coating stays put, you can eliminate the cost of plating, painting or redipping after fabrication. In many jobs, the lubricating property of the zinc coating will prolong die life, too.

*Free Weirkote Booklet!*

*Send for all the facts on Weirkote.*

*Write Weirton Steel Company,  
Dept. A-5, Weirton, West Virginia.*



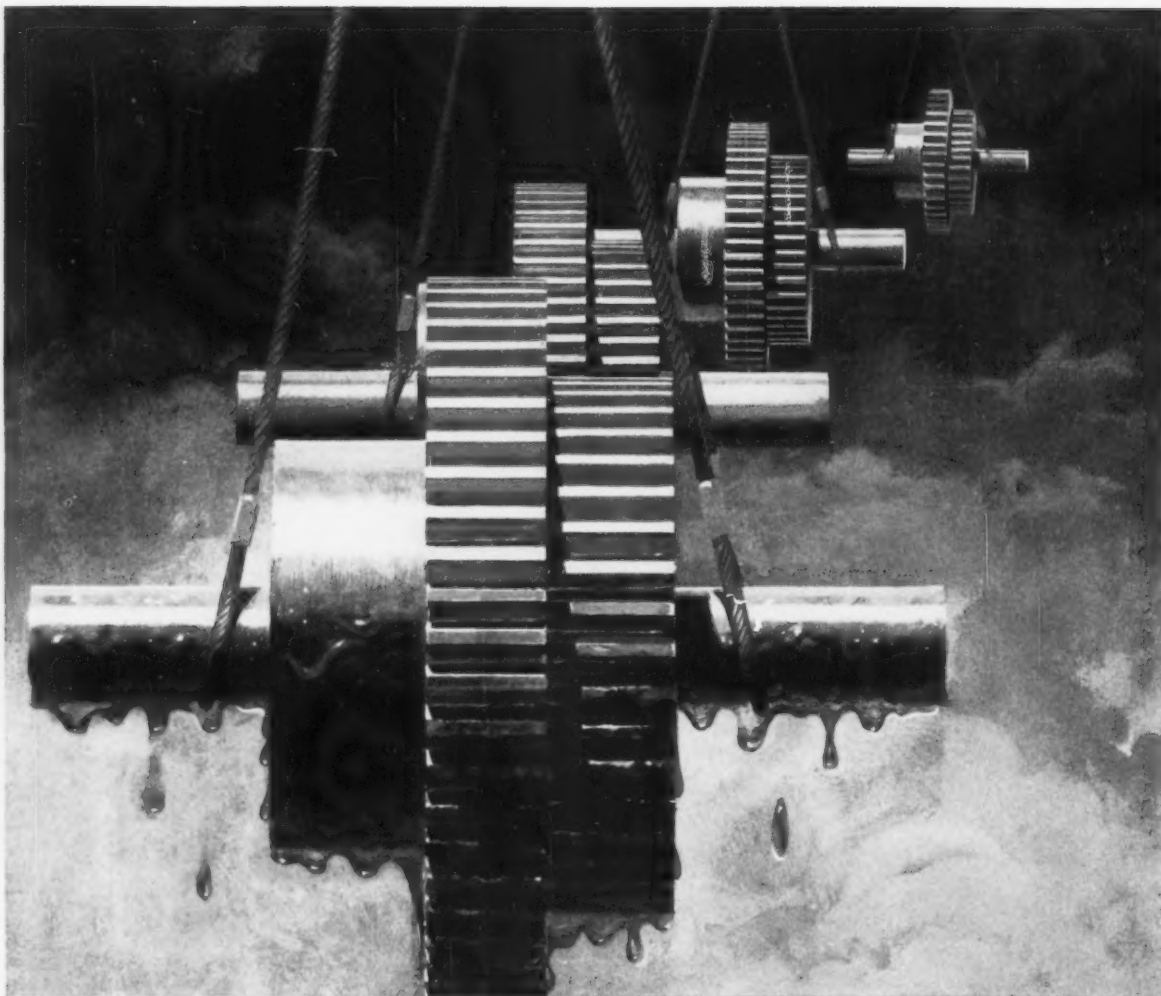
**WEIRTON STEEL  
COMPANY**

WEIRTON, WEST VIRGINIA

a division of

**NATIONAL STEEL CORPORATION**





The "built-in" stability of Columbia-Southern Trichlor enables the solvent to be used over and over again

## ***fast, efficient, economical vapor degreasing with Columbia-Southern Trichlorethylene***

Columbia-Southern, the world's leading merchant producer of chlorine, is an important producer of trichlorethylene . . . the preferred solvent for metal cleaning by vapor degreasing.

Metal cleaned by Columbia-Southern Trichlor is dry and grease-free, ready for further fabrication, finishing, painting, and in many instances, for plating. The degreasing is rapid and efficient . . . completely cleaning even the most intricate forms or parts.

Columbia-Southern Trichlor is a product of very high quality. It is non-flammable, has a high vapor density and low boiling point which keeps vapor losses low.

Columbia-Southern Trichlor is extremely stable . . . the result of an exclusive development in Columbia-Southern's own laboratories, known as *neutral type stabilization*. The solvent is protected from the action of light, heat, oxygen, and acids. It is unaffected by moisture. This stability is "built-in" and remains after repeated distillations.

Columbia-Southern Trichlor is available in tank cars, tank trucks, and drums.

For further information on the use of Trichlor for vapor degreasing, you are invited to write today to your nearest Columbia-Southern sales office or to your solvents distributor.

### **COLUMBIA-SOUTHERN CHEMICAL CORPORATION**

SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY  
ONE GATEWAY CENTER • PITTSBURGH 22 • PENNSYLVANIA



DISTRICT OFFICES: Cincinnati • Charlotte,  
Chicago • Cleveland • Boston • New York  
St. Louis • Minneapolis • New Orleans • Dallas  
Houston • Pittsburgh • Philadelphia  
San Francisco

IN CANADA: Standard Chemical Limited and its  
Commercial Chemicals Division



**You're looking at**  
*dependability*

Cutting tools made from quality high speed steel . . .

*Stronger - Tougher  
 More Economical  
 Less Chipping*

**than  
 Carbide tools**

On countless cutting applications, users consistently find tools made of quality high speed steels give more economical, dependable performance than carbide tools. The superior toughness of quality high speed steel gives greater cutting versatility . . . no need

to "baby" the tool under variable chip load conditions. Also, with proper sharpening and honing (comparative to that given carbide tools) phenomenal performance can be obtained from high speed steel.

**First in quality!**

***Latrobe's***  
**XL® high speed  
 steels**

Latrobe's XL® high speed steels contain uniformly dispersed alloy sulphides for improved machinability and longer tool life. These alloy sulphides, together with the wear resistant carbide particles, are evenly distributed throughout the steel by Latrobe's exclusive DESEGATIZED® process of manufacture. This unique process assures full structural uniformity, higher edge strength and consistent response to heat treatment.

**Use dependable tools . . . use high speed steel cutting tools.**

Your nearest Latrobe representative will be pleased to give you complete data on Latrobe's XL® high speed steels.

**LATROBE**  
**STEEL COMPANY**

**Main Office and Plant: Latrobe, Pa.**

*Branch Offices and Warehouses Located in Principal Cities*

Both general industry  
and the aircraft engine industry  
*benefit* because  
King Fifth Wheel Company  
now offers two related facilities:

***At Philadelphia***—the ability  
to bend and weld  
carbon and low alloy steel rings  
for general industrial use;

***At Mountaintop***—the ability  
to bend and weld  
high temperature alloy steel rings  
chiefly for the aircraft engine industry.

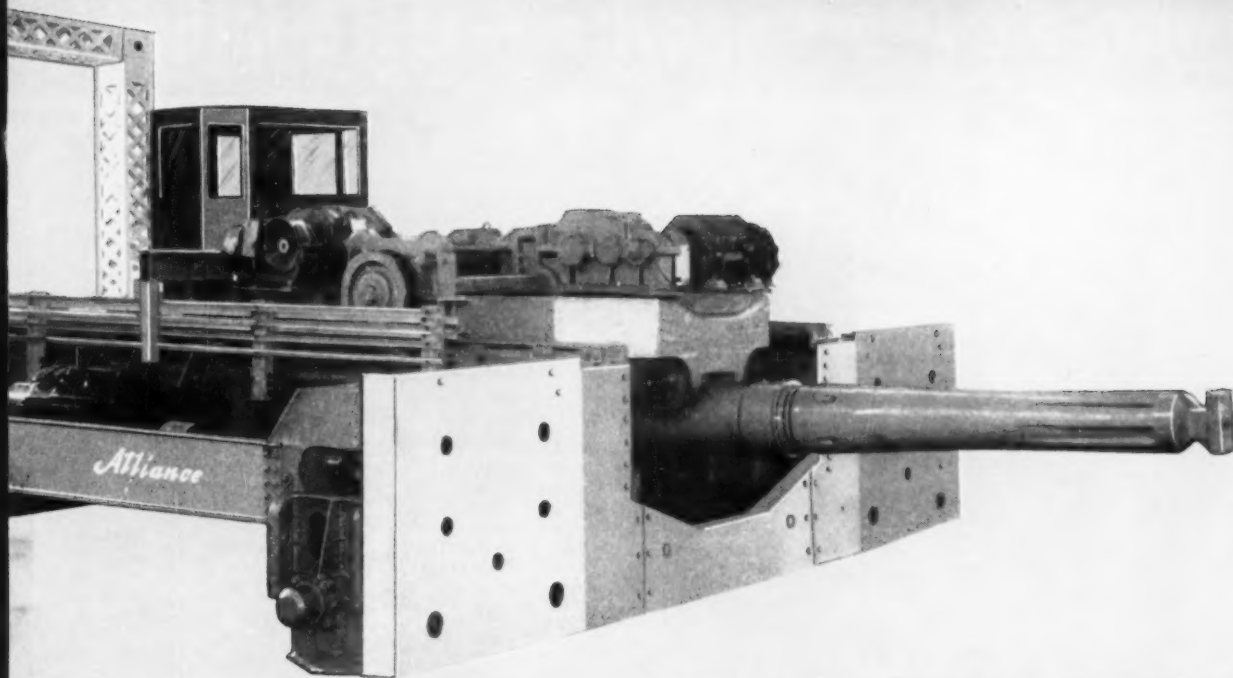
**YOUR BLUEPRINTS ARE INVITED**

## **King Fifth Wheel Company**

*General Industrial Division*  
2915 N. Second Street  
Philadelphia 33, Pa.

*Aircraft Products Division*  
Mountaintop, Pa.  
(Box 759, Wilkes-Barre, Pa.)





This Charging Machine was built by The Alliance Machine Company, Alliance, Ohio . . . leaders in the heavy material handling equipment field for over 50 years. Contact Alliance for your requirements.

LADLE CRANES  
GANTRY CRANES  
FORGING MANIPULATORS  
SOAKING PIT CRANES  
STRIPPER CRANES  
SLAB AND BILLET  
CHARGING MACHINES  
OPEN HEARTH  
CHARGING MACHINES  
SPECIAL MILL MACHINERY  
STRUCTURAL FABRICATION  
COKE PUSHERS

## New 12-TON CHARGING MACHINE

• **The NEW Alliance 12-ton**, low-type open hearth Charging Machine has spring-loaded pitman so, if the charging box pushes up over scrap in the furnace, the trolley's front wheels remain on the rails. Trolley always has sufficient traction to retract peel and box from furnace.

• **Each bridge girder** of Alliance's NEW Charging Machines consists of two wide-flanged I-beams welded to form a box section. Between webs of this box section, diaphragms are welded at 3-ft. intervals. This, plus other welded reinforcements, keeps charging machine square and rigid.

• **Machinery deck plate**, extending full length of bridge between main girder and outrigger girder, laterally reinforces the main girder and helps keep charging machine square and stable under all operating conditions.

• **Stabilized, shock-absorbing wheels** operate at rear end of trolley. Two rear wheels engage upper rail; two adjacent wheels engage lower rail. Powerful springs hold wheels in contact with rails at all times. This spring suspension absorbs and disperses engaging and disengaging shock at end of the peel, reducing operator shock and fatigue to a minimum.

• **On eight-wheel bridges**, the four trucks located at corners of the bridge are equalized to compensate for any track irregularities.

• **New hydraulic lock rod** gives operator finger-tip control and eliminates laborious work incident to the hand-operated lock rod. All gears (including track wheel gears) are fully enclosed and run in oil.

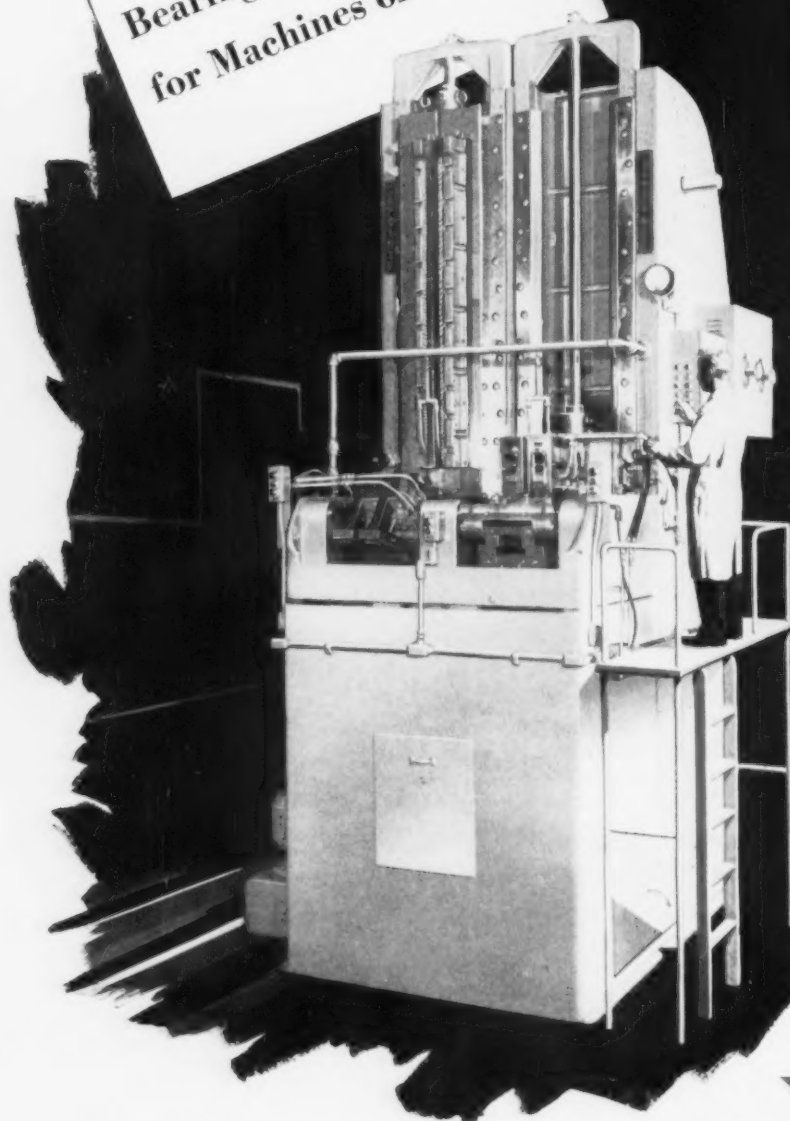
WORLD'S LARGEST BUILDERS OF WORLD'S LARGEST CRANES

Founded 1901  
**THE Alliance MACHINE COMPANY**  
MAIN OFFICE • ALLIANCE, OHIO

GIVE US THE RUNWAY AND WE'LL LIFT THE WORLD

**BARIIIM STEEL** — active in America's growth

**Bearings of the Future  
for Machines of Today!**



Rollway Maximum  
Bearings are used in  
Lapointe Broaching Machines

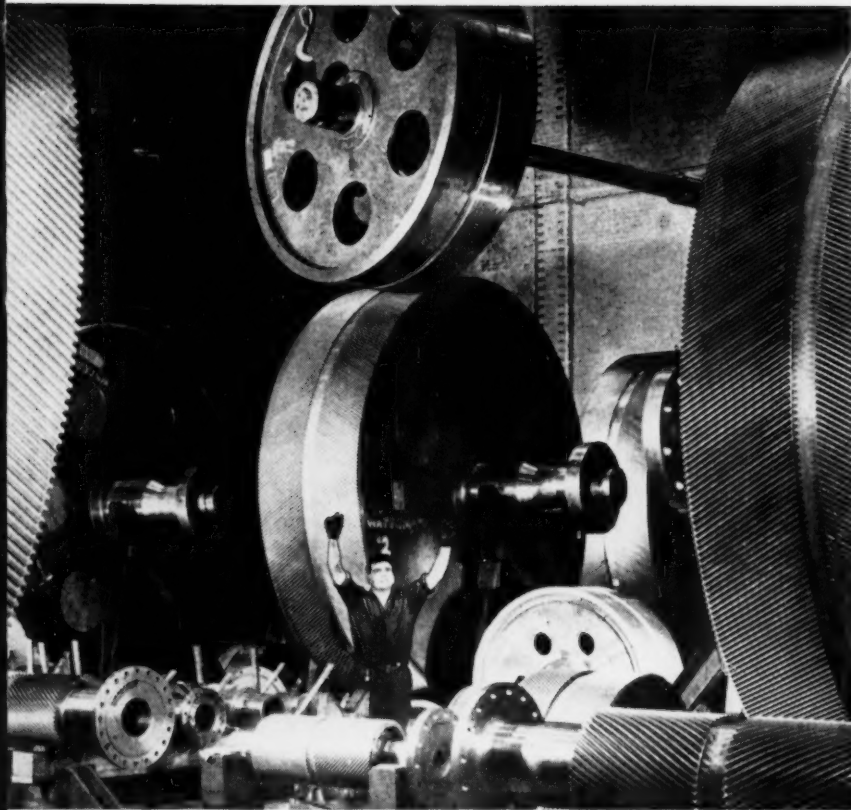
Rollway roller bearings regularly offer performance capabilities for more than the needs of today. They are continuously anticipating the operating requirements of years ahead.

Wherever bearing precision and load values are important in your plant or products — for original equipment or replacement service — call on Rollway *bearings of the future*, to give you the utmost performance in your machines of today. Rollway Bearing Company, Inc., Syracuse 4, N. Y. Manufacturers of a complete line of radial and thrust cylindrical roller bearings.



ENGINEERING OFFICES: Syracuse • Boston • Chicago • Detroit • Toronto • Pittsburgh • Cleveland • Milwaukee • Seattle • Houston • Philadelphia • Los Angeles • San Francisco

# BARIUM STEEL—active in America's growth



**MARINE** propulsion gears, an integral part of General Electric ship propulsion units, use steel plate from Barium's Phoenix Iron & Steel Company, Plate Division. These massive web plates are welded to forged steel rims and hubs—the most practical method of construction for large diameter marine gears (up to 162½ feet). In addition to steel plate Phoenix also produces structural steel shapes, heavy wall seamless pipe, and turns out large and small steel fabrications.



**HIGHWAY** builders timed the installation of this 132-ton, 180-foot-long girder fabricated and erected by Barium's Phoenix Bridge Company at an incredible 27 minutes. This Phoenix-built bridge will carry the New England Thruway over the 4-track main line of the New York, New Haven and Hartford at New Rochelle, New York. Part of the credit for quick work against a tight railroad schedule goes to the Barium-built 100-ton Clyde derrick.

Project of New York State Dept. of Public Works. General Contractors: Arthur A. Johnson Corp., MacLean Grove & Company, Inc.



**BUILDING** going up here (New Providence, New Jersey) is a new plant for EXCO, Inc. Structural steel comes from Barium's Phoenix Iron & Steel, Structural Division. Elizabeth Iron Works of Elizabeth, N. J. are steel contractors on this job; they find Barium a good company to work with on small as well as large jobs.



**Steel producers, fabricators, product manufacturers**

For further information on this close knit, alertly managed team of companies—its engineering resources, production facilities or specific products—write for "The Barium Story" to:

25 BROAD STREET, NEW YORK 4, N. Y.



**MATERIALS-HANDLING** at this East Coast shipyard centers around the Clyde crane above with its 20-ton capacity, 65-foot reach and mobile 70-foot tower. It's only one of many cranes that Barium's Clyde Iron Works has supplied to this customer. If you've got a materials-handling problem coming up, chances are a Clyde crane, hoist or unloader can give you the lift you're looking for



**CONSTRUCTION** of New York's 30th Street Heliport began as this Wiley floating crane with its 110-foot boom slammed the first steel pile down to bedrock. Barium's Wiley Manufacturing Company, the nation's largest manufacturer of floating cranes, built this one for George W. Rogers Construction Corp., contractors for the Port of New York Authority. Wiley also produces work boats and steel barges.

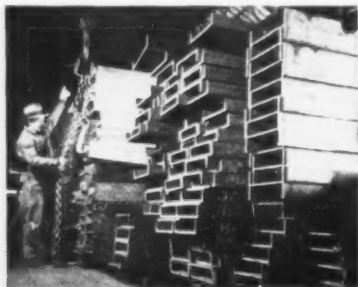
# STEEL BUYERS GUIDE to Ryerson Products and Services

You can draw on your nearby Ryerson plant for an almost endless number of products and services—and the more you concentrate your purchases at one source, the more you save. Ryerson

products not pictured here include: Re-bars, expanded metal, grating, plastic pipe, machinery and tools, etc. See your Ryerson catalog for complete list and write for descriptive literature.



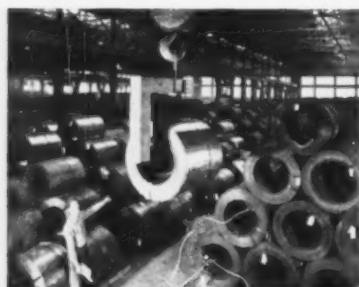
**BARs**—The most complete range of types, shapes and sizes as well as the largest tonnage.



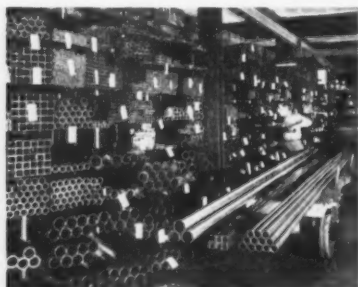
**STRUCTURALS** — I-beams, H-beams, channels, angles, tees and zebs—all to ASTM spec. A-7.



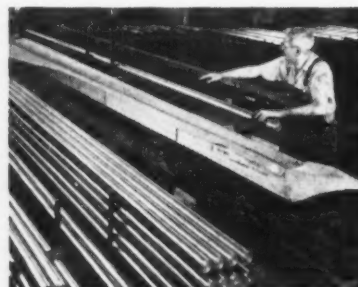
**PLATES**—14 types including special low carbon plates for forming and welding, leaded New E-Z-Cut, etc.



**SHEETS & STRIP**—More than 20 different types in pattern sizes, cut-to-order sizes, strip coils, etc.



**TUBING**—Seamless and welded mechanical tubing, fluid power tubing, structural and boiler tubes, etc.



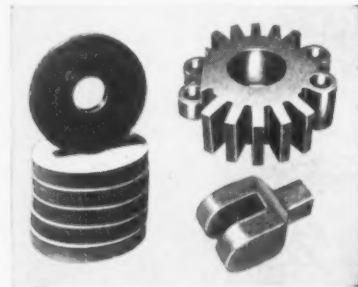
**C. F. BARs**—Cold finished steel for every use: screw steel, Ledloy, accuracy stock, machinery steel, shafting, etc.



**ALLOYS**—Every type including leaded alloys for fastest machining, all performance-proved by tests.



**STAINLESS**—Allegheny stainless in over 2,221 sizes, shapes, types, finishes: sheets, plates, bars, pipe, etc.



**FLAME CUTTING**—Almost any shape quickly cut from strong rolled steel—one or hundreds all alike.

## RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI  
CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



## 1957: Record Year For Steel?

Steel production will get off to a running start in first six months of 1957. If demand holds up for balance of the year, an all-time production record is possible. THE IRON AGE forecast: production of 116 to 120 million tons. Present record of 117 million tons was set in 1955.

## Your Steel Costs Are Going Up

Steel in inventory will be like money in the Bank during first-half '57. Base prices are bound to rise after July 1. That's because the second phase of the three-year steel labor contract calls for another wage boost for steel workers. It's a safe bet that the price increase will average at least \$5 a ton—probably more. Other steelmaking cost boosts will figure in.

## Production Forecast Looks Good

A 4 to 5 pct increase in gross national product is the way American industrial leaders size up the situation for 1957. That's the average of their opinions according to a soon-to-be published survey. A sampling of metalworkers shows expectations of an 8 to 10 pct increase in business dollar volume.

## Scrap: Too High And Too Little

Scrap prices may have reached a high point, but scrap trouble still looms. Prices aren't the steel industry's only concern; it is actively worried about a possible scrap shortage. Continued high operating rates will keep demand for scrap at a peak. Increased scrap generation by the auto industry and a possible slowing of export rates may help somewhat.

## The Labor Outlook, More Relaxed

Nineteen fifty-seven won't be a critical year in labor relations. Most major industries are protected by long-term contracts extending through the year. But labor won't be inactive. It'll be mapping out details on several major objectives, including the short work week, accelerated organization of white collar workers. Another major organizing target: Southern industry. Ultimate aim is to equalize North/South wage levels.

## Construction: Good Year Ahead

Spending for all construction in '57 will hit \$46.5 billion — \$2.5 billion over '56 levels. Part of increase is in brisker building activity. Part's in rising costs. Government economists think costs of construction materials will continue climbing, but at a slightly slower rate than in '56. On availability, there'll be enough materials around. But spot shortages, including some types of steel, will exist.

## For Stainless, New Horizons

Stainless steel producers confidently expect 1957 to mark start of a sizeable upsurge in stainless use. Reasons are the increasing demands on equipment to take higher temperatures and pressures, plus stepped up demand from aircraft, chemical industries. Continued nickel shortage will up demand for 200 Series.

## Here's How Nonferrous Looks

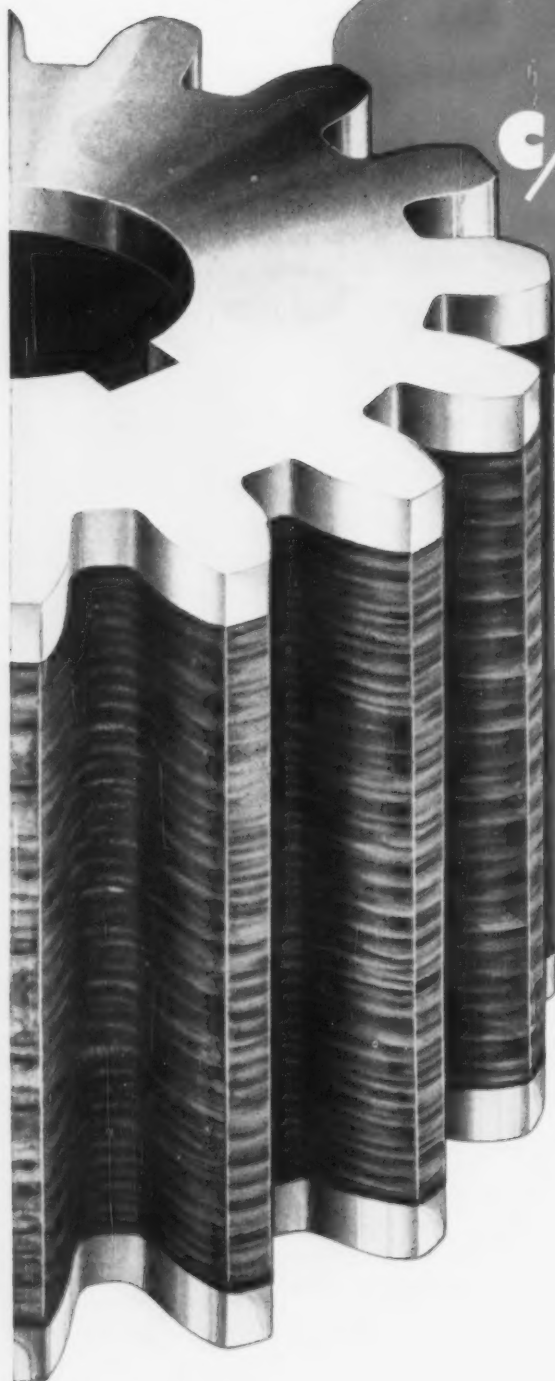
All major nonferrous metals will continue in at least as good supply as in '56. Both copper and aluminum should chalk up slight surpluses, with one, maybe two increases ahead. Lead and zinc will continue plentiful, with government buying balancing the market. Price increase before midyear is likely. On tin, there'll be enough—if it's at the right place at the right time. Nickel won't ease enough to notice.

## May Broaden Mine Law Coverage

Congress will decide this year whether federal mine safety legislation should be extended to cover metal, other kinds of mining. Regulations now cover only coal mining. A House subcommittee now leans toward either (1) direct federal safety rules, (2) a cooperative federal/state system or, (3) aids to strengthen state operations.

## Education: New Stimulants Called For?

Educators and laymen, working under White House sponsorship to stimulate interest in higher-level education, will make their first recommendations in June or July. Declining interest in science and engineering is especially a problem. By the end of the year, the group hopes to have a full-blown program ready to go.



## Do you know what **C/R RAWHIDE GEARS** can do for you?

**HERE'S WHAT**—They will transmit power quieter, with less vibration than other types of gears. These tough, resilient Rawhide gears will absorb momentary overloads up to 3 times their rated H.P. capacity . . . protecting expensive metal gears. Since C/R Rawhide pinions cause negligible wear, they actually prolong the life of mating metal gears.

**MORE FACTS**—They require no lubricant, are nonconductors, and are extremely durable. Rawhide spur gears are cut in sizes from 1" O.D.,  $\frac{1}{4}$ " face up to 30" O.D., 12" face. D.P.'s range from 48" to 1 $\frac{1}{4}$ "; horsepower ratings go up to 50 H.P. or more. Where high temperature and humidity are factors, C/R gears cut from Nylon, Fabroil, Bakelite, or Micarta may be more suitable.

**ASK C/R**—We've been cutting non-metallic spur, helical and bevel gears for all types of applications for over 74 years. May we help solve your gear problem?

*Please write for illustrated C/R Gear Booklet.*



**CHICAGO RAWHIDE MANUFACTURING COMPANY**  
1219 Elston Avenue • Chicago 22, Illinois

Offices in 55 principal cities. See your telephone book.

**In Canada:** Chicago Rawhide Mfg. Co. of Canada, Ltd.  
Export Sales: Geon International Corp., Great Neck, New York

GEAR

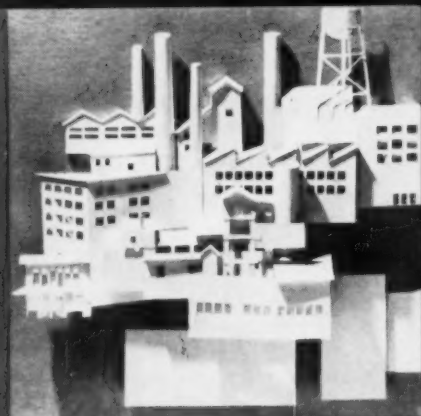


DIVISION

**CHICAGO  
RAWHIDE**

**Other C/R Products**

C/R Shaft & End Face Seals • Sirvene  
(synthetic rubber) molded pliable parts • Sirvis-Conpor  
mechanical leather cups, packings, boots



# Metalworking's Growing Markets

1. Memo To Metalworkers:  
Plan For Another Big Year— P. 146
2. New Customers: Eight a Minute— P. 153
3. The Next Five Years in Steel— P. 158
4. Aluminum: Plan Now For New Markets— P. 162
5. Copper Prepares For Bright Future— P. 166
6. Tips on Selling . . .  
America's No. 1 Customer— P. 169
7. Finding New Markets . . .  
How The Government Can Help— P. 173

# 1957 Business Roundup

## Outlook For Metalworking

### STEEL

**A probable record.  
Production  
116-120 million tons**



### MACHINE TOOLS

**A second  
consecutive  
\$1 billion year**



### AUTOMOTIVE

**A comeback  
to 7 million cars,  
1.5 million  
trucks**



### CONSTRUCTION

**Up 5 pct  
to \$46.5 billion**

## Memo To Metalworkers: Plan For

As industry highballs into the new year, the economic seers see little to fret about, plenty to cheer. It looks as though the boom that began in 1955 has lost none of its zip.

The broad family of industries that make up metalworking agree almost unanimously that business will be at least as good as in 1956. For some it will be much better, for others only slightly better.

You can look for another good year in '57. As the year begins, Americans everywhere are busy. They are working, building, and spending harder than ever before. It seems to some as though the country's ability to produce is be-

ing strained to a near-breaking point.

Even the economists, almost to a man, predict that 1957 will be an even better year, businesswise, than 1956. Their only hedge is that maybe production will be no greater, but that inflation will make it seem so.

The economists look at Gross National Product—the country's output of goods and services—and foresee a seasonally adjusted annual rate of \$420 billion. That's 1.4 pct ahead of the third quarter of 1956, and more than double the total of \$209 billion reached in 1946.

But—and here's where inflation colors the economists' figures—they expect no significant increase in industrial output as measured by the Federal Reserve Board's index of industrial production. The FRB index is based on physi-

cal output, not dollars; which accounts for the apparent contradiction with opinion on GNP.

They look at construction and see a slight rise; not quite so optimistic as the Commerce Dept., which looks for a gain of 5 pct over '56.

They predict that personal consumption will be up about 3 pct.

But economists—at least most of them—are notoriously cautious, and tend to underestimate economic peaks and valleys.

So the New Year could be even better than it looks at the start, as you will see from an industry-by-industry check by THE IRON AGE editors.

Metalworking and metalproducing will contribute a large share to the general prosperity.

There are nagging worries, to be sure. The biggest one is infla-





## **APPLIANCES**

**A conservative  
10 pct gain**



## **AIRCRAFT**

**From  
a big \$17.2 billion  
backlog,  
a \$8.5 billion  
peacetime record**

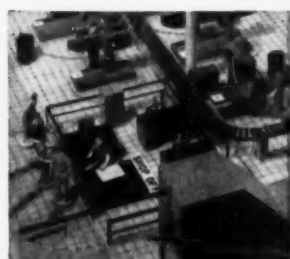
## **FARM EQUIPMENT**

**From  
a poor year,  
5 pct better**



## **ALUMINUM**

**Another  
record of  
1.8 million tons**



## **NEW PLANTS AND EQUIPMENT**

**Investing  
up to  
\$35 billion**



## **DEFENSE**

**Spending  
up to  
\$40 billion**

# Another Big Year

tion. Government planners are worried; so are the economists. And so are businessmen. Prices are rising—they have been since mid-1955. And most of the experts expect inflation to be a big problem in 1957.

But at the same time, some people are as worried about deflation—and its contrary effect—as they are about inflation. They are concerned about the government's best weapon for combatting inflation—the Federal Reserve Board's so-called "hard money" policy. They are afraid that FRB might overdo it; that it might apply the brakes too hard and throw the economy into a tailspin.

But the "ayes" seem to outweigh the "no's," and it looks as though the Government is intent on continuing its anti-inflation policy well into the New Year. This, de-

spite complaints of some businessmen that hard money and high interest rates are slowing their markets.

Actually, the problem is a relatively pleasant one compared with those of some earlier years in U. S. industrial history.

For Americans are truly busy and prosperous. Even the farmer is in better financial position as the Soil Bank program, coupled with good demand for his products, begins to fatten his pocket-book.

The story is the same everywhere. In the steel centers of Pennsylvania, Ohio, and West Virginia; along the assembly lines in Detroit; in the machine tool hubs of Ohio, Illinois, Michigan and New England; the coal fields of Pennsylvania and West Virginia; in the railroad car shops and the

shipyards; in the plane factories of the West Coast, and the oil fields of the Southwest.

No industry seems to be in real trouble, although a few are less prosperous than others. Tightened credit is hurting the housing market, and, indirectly, those industries that live off it. Farm equipment makers have just come through a poor year. But there are bright spots even here.

As THE IRON AGE editors made their year-end check of metal-working industries, they found plenty of evidence to support the predictions of the economists. If anything, businessmen are straining to curb their own optimism. Here's how the economic picture looks:

## **I. AUTOMOTIVE**

In Detroit, for instance, the automakers are talking about producing 6.5 million cars and 1.2 million trucks in '57. But somehow the impression is that the car

builders are deliberately understating what their marketing specialists tell them. Some people are saying that 7.2 million cars and 1.5 million trucks would be more like it.

But as one producer puts it: "It's easier to revise estimates upward than it is to cut them down."

The auto companies are more optimistic than they care to admit publicly. But even so, they have a few worries. First is the price of the new models—6 to 7 pct higher than last year. They can't be sure that the auto buyer will be willing to pay the higher tab. Another worry is that they can't push their dealers like they used to. The dealers have been more independent since last year's Washington hearings on producer-dealer relations. They prefer to accept fewer cars, make up the difference through higher profit margins. How this will affect buyers accustomed to high trade-in allowances is still in doubt.

But offsetting these "iffy" worries are (1) the all-new styling

and performance of the '57 models, (2) people have more money to spend and, further, are looking for another round of wage and salary boosts mid-way through the New Year, and (3) most of the cars bought in record-breaking 1955 will have been paid for some time this year—and that means a lot of people will be hitting the showrooms ready to buy.

## 2. STEEL

In steel, Tom Campbell, IRON AGE editor-in-chief, checked sources of many years standing and comes up with this prediction for '57:

"Hemming and hawing aside, steel production this year will range between 116 and 120 million ingot tons. Strike-disrupted '56 output was about 115 million tons. It could establish a new record for the industry. Hysteria will be absent from the market. Capacity will approach, if not exceed, 132 million tons for a 3.6 million ton jump."

Adds Mr. Campbell:

"International affairs and our

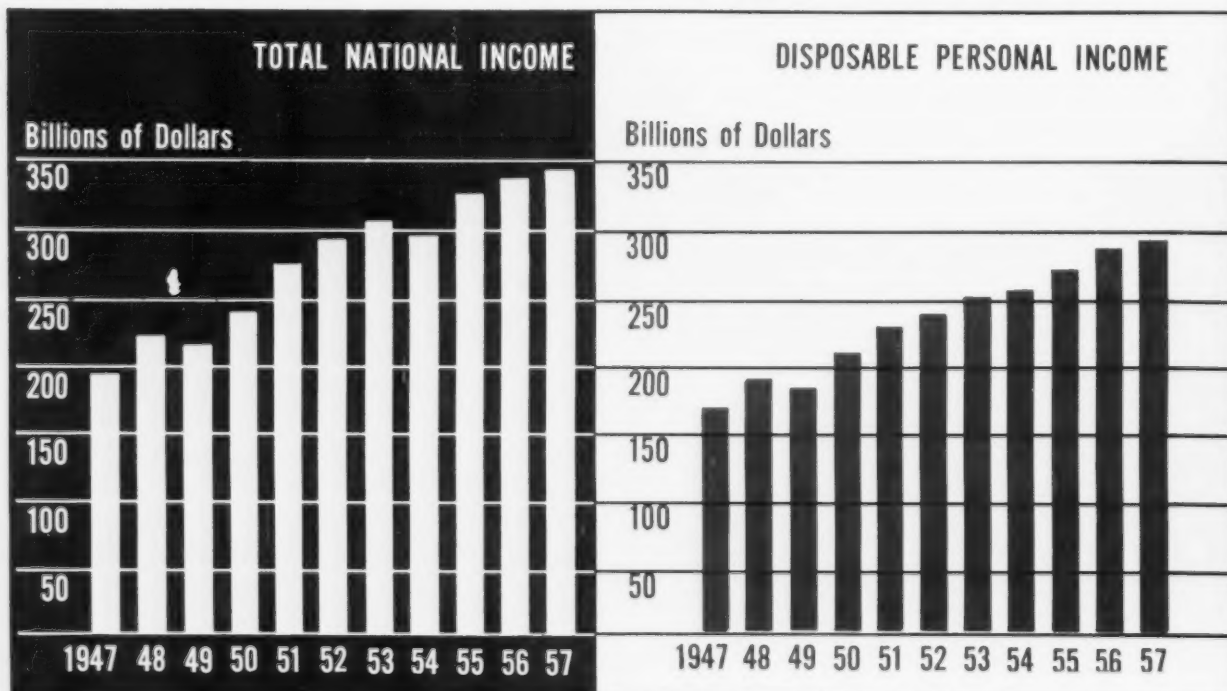


EGYPT'S NASSER is symbolic of men whose decisions and actions in 1957 will affect the world's business.

own defense program are the main intangibles. Both could result in a far more active year in steel than is forecast here.

"There will be no controls in steel unless we get into a war. The Administration has been against them. In the past, controls have not added one pound of steel to the total picture; they have—in peacetime—made a mess of steel distribution."

# How the Nation's Income Continues Its Climb



Source: Dept. of Commerce

Source: Dept. of Commerce

Behind that prediction for steel are these factors:

1. It will be a good year for automotive; not as good as '55, but better than '56.

2. There'll be a switch in inventory policy from one of reduction to one of maintaining an even keel or building up. There may well be some inventory reduction later in the year.

3. Not one major steel-consuming industry will use less steel this year than last; except possibly residential housing. And that will be made up by increased public and private commercial building.

4. Farm spending should be back with a bang. That spells heavier steel buying for farm buildings, autos, trucks, and farm implements.

5. Railroads will be heavier steel buyers this year. The mills are channeling more steel to the freight car builders. But they must divert even more to them—enough to maintain a monthly schedule of 6000 new cars. And repair and renovation of old cars will take close to a third of the steel allocated for new-car construction. The postponement of rail-laying will also be a factor

in the market this year — more rails will be bought than last year.

6. International tension growing out of the Suez explosion will step up plate and pipe demand. The need for oil tankers and a readier supply of emergency oil has been brought home. This could be translated into more steel for ships, pipelines, and drillings.

7. Expansion programs of the steel mills are still enormous. The mills will be spending about \$3 billion in the next three years for expansion. They're planning to add five million tons annually through 1958. And for every four tons of new capacity, one ton of

## What's The Outlook For Steel Prices?

Because of rising steel production costs since the \$8.50-a-ton base price increase of last August, steel prices began moving up in December. These rises included carbon steel extras and base prices of nickel-bearing stainless steel grades. Extra boosts may average \$3 a ton.

In addition, steel base prices will rise again July 1, when steel wages are scheduled to go up under

terms of the three-year contract with the United Steel Workers of America. A minimum increase of \$5 a ton is expected.

It's estimated that by Jan. 1 steel production costs had risen a conservative \$5 a ton since August. On top of that, a cost-of-living wage increase of 3¢—possibly 4¢—went into effect Jan. 1. Still further cost increases appeared to be in the making.

steel is required for new structures and equipment.

## 3. MACHINE TOOLS

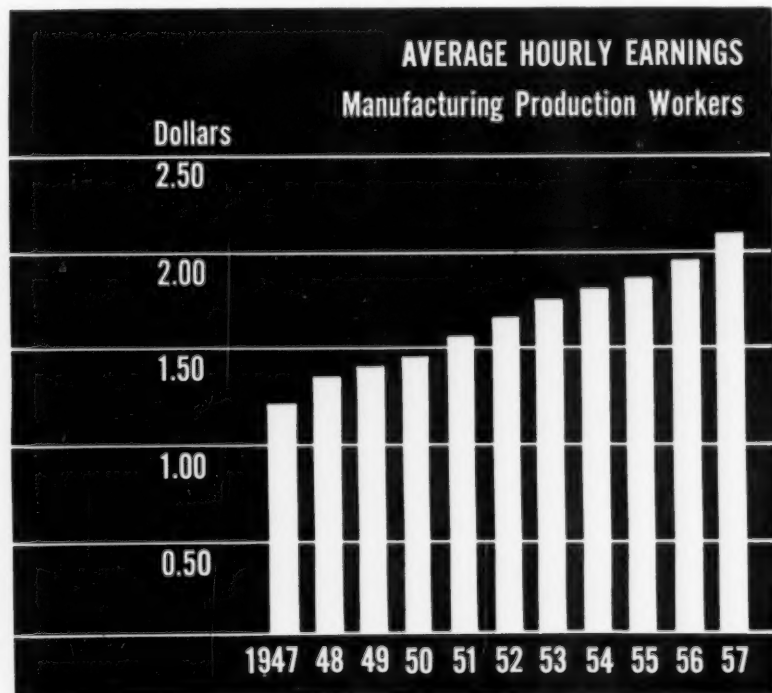
Machine tool builders are confidently planning for their second billion-dollar year in a row. Shipments of metal cutting and forming equipment are expected to again top \$1 billion, possibly by a bigger margin than in 1956, which set a new peacetime record for both orders and shipments.

Apart from expected good demand from such industries as automotive, machine tool people look for more defense buying than since the Korean emergency. One reason is that the Army, Navy, and Air Force have been told to plan on replacing a lot of active but obsolete machines on a regular annual basis.

If Congress comes through with the money, these replacement orders should start showing up July 1, when the 1958 fiscal year begins. Talk in the industry is that this business will add up to about \$150 million in the last half of 1957.

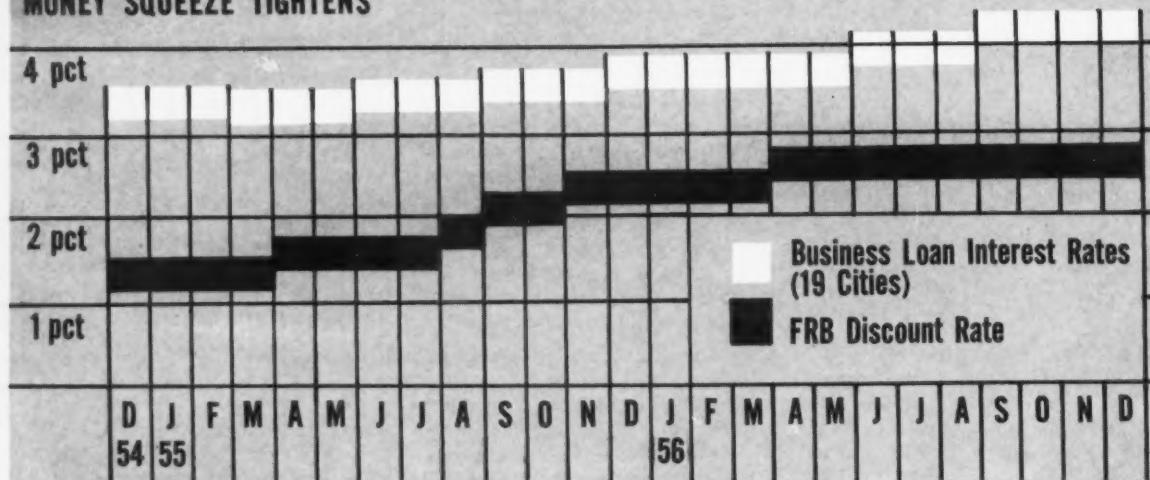
There's still another defense angle that could boost new orders this year. About 80 builders of general-purpose machine tools have so-called "trigger" contracts tucked away in their office safes. These are fused to take effect the minute the U. S. declares full mobilization. Total value of "trigger" contracts is about \$250 million, but a major defense effort would push this figure up fast.

But most builders don't want any more defense business than they can turn out with the left



Source: Dept. of Labor

## MONEY SQUEEZE TIGHTENS



Fiscal Year	Total	A BIG PUSH FROM DEFENSE			
		FUNDS VOTED DEFENSE DEPT.	In Billions of Dollars		
			Army	Navy	Air Force
1952	60.4		21.6	16.0	22.2
1953	47.0		13.6	12.5	20.3
1954	34.4		12.9	9.3	11.4
1955	29.1		7.0	9.7	11.6
1956	33.1		7.0	9.6	15.7
1957	36.5		7.8	10.3	17.7
1958	40.0				

Iron Age Estimate

### BUSINESS ROUNDUP

Continued

hand. They're out to do a real selling job on civilian business—the bread-and-butter stuff over the long pull.

Builders and distributors plan to persuade customers to (1) adopt more liberal depreciation rates that yield quicker and bigger returns on machine tool investments, and (2) build profits through wise use of automatic machines. Biggest push is aimed at replacing thousands of machines that are 10, 20, and 30 years old.

Industry's big capital improvement programs will continue through 1957. This assures con-

tinued big expenditures for machine tools.

It all adds up to an extremely favorable position for the machine tool builders.

## 4. CONSTRUCTION

The construction boom—apart from home building—seems to be limited only by the availability of materials to keep it going. The Commerce Dept. forecasts that total new construction in '57 will amount to \$46.5 billion, a 5 pct increase over last year's \$44.1 billion. F. W. Dodge Corp. predicts that dollar volume of construction contract awards this year will be 7 pct above 1956. For 37 eastern states, Dodge says such awards

will total \$26.8 billion.

The big highway program is moving from low into cruising speed. Preliminary estimates for 1956 indicate that investment in all types of road construction—interstate, primary, secondary, and urban—came to about \$4.5 billion. Completion of existing projects and starting of new ones should raise the total to \$6 billion.

Through mid-November, federal officials had approved programs on the new, 41,000-mile interstate system alone that were valued at \$2.7 billion. Actual contract awards lagged at \$157 million.

Gaps between approvals and awards, as far as the interstate net is concerned, probably will not



close much this year; in part because of the time consumed in right-of-way buying. The government will be apportioning some of its funds for the coming fiscal year (\$1.7 billion) and for fiscal 1959 (\$2 billion) during this period.

## 5. APPLIANCES

The predicted decline in new residential housing starts is unsettling news for the country's appliance makers. But not unsettling enough to curb their optimism. Some are predicting gains of 30 pct over '56; but overall it amounts to about 10 pct.

It seems as though much of the load this year will be carried by the old standbys—the same appliances that racked up spectacular gains last year: dryers, washers, vacuum cleaners, dishwashers, and some types of radios. The laggards are expected to be refrigerators and ranges.

To old-time observers, the predicted 10 pct gain in the face of a decline in housing starts is not in the least starry-eyed. For this reason: The 1949-1955 average for six major appliances works out to about a 10 pct gain per year on a unit basis. The six are refrigerators, ranges, freezers, steel cabinets, automatic washing machines, and air conditioners. All run above 1 million units per year in sales.



**TIGHT MONEY** is a critical point in 1957 business. FRB's William McClesney Martin's policies are controversial to say the least.

## 6. FARM EQUIPMENT

After struggling through a year like '56, farm equipment makers are in no mood to go overboard about prospects for the New Year. But the signs are there and they can't be ignored: (1) farm bank accounts are high, (2) farm debt is comparatively low, (3) scattered price increases are fattening farm pocketbooks, and (4) Soil Bank money is in the offing.

There is no doubt that the farmer needs new equipment. Replacement needs for wheeled tractors alone are estimated at 13 pct above 1956. Of the roughly 4.5 million tractors on American farms, some 50 pct have reached retirement age.

With these plus signs to back them up, farm equipment makers take a deep breath and come up with a forecast of a 5 pct gain over 1956. Some companies go out on a limb and forecast a 10 pct gain. Actually, the outlook seems to be better than any company cares to admit.

On the deficit side, the implement makers look at their inventories and shudder. Both J. I. Case and Minneapolis-Moline are frank to admit to some over-production. As a result, production in the early months of the year is expected to be slow until inventories are brought down to workable levels.

But despite a half decade of declining manufacturing levels, farm equipment makers find themselves in a strong financial position. This comes about through judicious diversification.

## 7. NEW PLANTS AND EQUIPMENT

Prospects for new plant and equipment spending provide another bright spot in the economic outlook. Some 200 economists surveyed by F. W. Dodge came up with an average forecast of \$37 billion, with about three-fourths of them settling in a range of \$35 to \$40 billion, inclusive. This would be even better than last year's record-breaking \$35 billion, as estimated by the Dept. of Commerce. And it would represent a



**U. S. STEEL'S** Roger M. Blough. His influence kept steel price increases at a minimum in 1956. But 1957 brings new pressures for higher prices.

27 pct boost over 1955's \$29 billion. Investment in new plants is a must to improve productivity.

## 8. PETROLEUM

Oil is another industry to watch, particularly in view of Middle East tension. S. A. Swensrud, chairman of Gulf Oil Corp., points to forecasts of a growth rate for petroleum consumption of more than 4 pct per year, through 1965, predicts annual spending of \$8.5 to \$9 billion a year by 1965.

Last year, such spending came to about \$6 billion. This could be an understatement if the burden of supplying oil to our allies and at the same time meeting increased demand from our own people should fall on the U. S.

## 9. COAL

The coal industry is again flexing its muscles after some years of playing the role of underdog to oil and gas. Its overseas markets are expanding. It's selling more to electric utilities and steel despite more efficient use of coal by both these growing industries. There's even a shortage of coke breeze due to (1) increasing use of sintering lines in the preparation of iron ore for the blast furnaces, and (2) demands of ferroalloy and electric furnace operations. It may be necessary to crush coal especially for these purposes instead of just screening.

And so it goes in coal, which

this year looks for consumption of 461 million tons, compared with 448 million tons last year and 363 million tons in 1954.

## 10. AIRCRAFT

On the West Coast, aircraft manufacturers are looking for another year of high volume. In dollars, they expect to produce \$8.5 billion worth, versus \$8.3 billion in 1956. Should war come, the figure would jump to astronomical heights.

Right now the industry is sitting firm on a \$17.2 billion backlog, about 80 pct of it in military



**MASTERMINDING** giant highway program is the job of Federal Highway Administrator Bertram D. Talamy, a new man on a big job.

aircraft and guided missiles. And new orders are coming in at a breath-taking pace. The tens of thousands of subcontractors across the country will be kept plenty busy during 1957.

The new year will also see an accelerated building rate for commercial transports. Five major companies have orders for 600 planes worth about \$2 billion—550 of them to be built on the West Coast.

Airlines, both domestic and foreign, are eager to get them in the air. Their bigwigs say they will spend another \$7.5 billion during the next 15 years. Most of this business will come to U. S. plane-makers.



**LONG TERM LABOR** contracts in most industries prevent 1957 from being a critical year in labor relations. But AFL-CIO President George Meany, left, and CIO head Walter Reuther are already charting future goals.

The aircraft industry today is the nation's No. 1 manufacturing employer. It will pay out over \$4 billion in 1957 to 800,000 workers.

## 11. NONFERROUS

In the nonferrous field, aluminum users can look forward to a comfortable year. Three good reasons: (1) little metal will be going into the government stockpile during the first six months, (2) continued labor peace under a three-year contract, and (3) expanding capacity.

Aluminum supply this year, including primary and secondary production, plus imports, should aggregate 2,550,000 tons. This is nearly 9 pct ahead of last year's 2.3 million tons, which in turn was 3 pct better than 1955.

Apart from the uncertainties of international relations, copper users started the new year in better shape than in 1956. Metal was scarce as 1956 began. But as the year ended, two major producers cut back operations.

Stable zinc and lead markets are looked for in '57. Government stockpiling acts as a cushion for both markets. Higher prices could materialize by mid-year.

Tin is sensitive to international developments. This is natural since most of it comes from Malaya and Indonesia, either across the Pacific or through Suez. The

Suez crisis and the U. S. dock strike pushed prices to \$1.10-\$1.15 per lb late last year.

With no nickel going into the stockpile during first half, it looks like nickel will be slightly more available in '57. But still not much to cheer about. Another happy note: world production and U. S. imports are likely to set records.

## 12. IRON ORE

Iron ore shipments from the Great Lakes are expected to total about 83 million tons this year, compared with about 77.5 million tons in 1956. The steel and ore strikes hurt 1956 shipments.

Imports will continue to increase from South America and Quebec-Labrador. And another price increase, possibly equal to the final 75¢ increase of 1956, is on the way.

Taconite shipments from Reserve Mining Co.'s new plant at Silver Bay, Minn., are expected to approach the rated annual capacity of 3.75 million tons. Shipments last year hit 3.5 million tons. Erie Mining Co.'s plant at Aurora was set back a full season by the steel strike so will not start shipments until 1958. Jasper pellets from Republic, Mich., will increase this year. The plant is operating at 600,000 tons a year. The Steep Rock Mine last year got out about 3.5 million tons for a new record.

## New Customers: Eight a Minute

	1956	1960	1965	1970	1975
<b>228.5</b>					
<b>209.4</b>					
<b>193.3</b>					
<b>179.4</b>					
<b>168.1</b>					

Because markets are people it is important to marketing men that U. S. population is growing at an unheard-of rate. Even more significant are the changes and trends within that population.

**Developments to watch are the coming boom in teen agers and the bright outlook for household formations. Also worth watching are items like the growth in manufacturing employment in the South and the West.**

By R. W. Burgess  
Director, Bureau of the Census  
U. S. Dept. of Commerce

During recent years, the population of the United States has increased annually by about 2.8 million persons. About 90 pct of this amount is represented by natural increase, the excess of births over deaths, and 10 pct by net civilian immigration.

About 23.5 million babies were born during the six-year period 1950 through 1955, with an estimated 4.2 million births for 1956 on basis of preliminary data through August. Deaths during the 1950-55 period numbered a little over 9 million with a record low mortality rate of 9.1 deaths per 1000 population in 1954 and a slightly higher rate of 9.3 in 1955. Relatively little change in the death rate is indicated for 1956.

With the total population, including armed forces overseas, an estimated 169 million in October, the prospect is that the total will pass the 170 million mark by early spring of 1957 and if the present rate is maintained the total population will be well over 178 million

This assumes 1954-1955 growth rate will continue. For details, see below.

As of July 1	Series AA	Series A	Series B	Series C
1960	179.4	177.8	177.8	176.5
1965	193.3	190.3	190.3	186.3
1970	209.4	204.6	203.0	196.4
1975	228.5	221.5	214.6	206.9

Series AA assumes that 1954-1955 fertility levels remain constant to 1975; Series A, 1950-1953 levels remain constant to 1975; Series B 1950-1953 levels remain constant

to 1965, then decline to "prewar" levels by 1975; Series C, 1950-1953 levels decline linearly to prewar levels by 1975. Data source: Bureau of the Census.

**Breakdown of U. S. population by age groups shows terrific coming impact of present grade-school youngsters . . . This will enormously increase demand for cars, appliances, housing in 10 years . . .**

Present 18-24 age group shows effect of depression of 30's. Also, 14-17 group needs will soon be felt.

### Population Including Armed Forces Change, 1950 to 1956

Age	July 1, 1956	April 1, 1950	Number	Pct
All Ages	168,091,000	151,132,000	+ 16,960,000	+ 11.2
Under 5	18,680,000	16,164,000	+ 2,517,000	+ 15.6
5 - 13	29,213,000	22,180,000	+ 7,034,000	+ 31.7
14 - 17	9,543,000	8,409,000	+ 1,133,000	+ 13.5
18 - 24	15,145,000	16,081,000	- 936,000	- 5.8
25 - 44	47,056,000	45,385,000	+ 1,672,000	+ 3.7
45 - 64	34,028,000	30,720,000	+ 3,308,000	+ 10.8
65 and over	14,426,000	12,195,000	+ 2,232,000	+ 18.3

#### POPULATION

*Continued*

in the 1960 census. So the natural process of population increase assures producers and distributors of an ever-growing home market for their goods.

Of the total population increase of nearly 17 million, between April 1950 and July 1956, more than half, 9.5 million or 56.3 pct, was in the age group under 14 years old, the result of high birth rate in recent years. About one-third of the total increase, 5.5 million or 32.7 pct, was in the group 45 years old and over and among these the group 65 years old and over increased by 2.2 million. The group 14 to 17 years old accounted for 1.1 million or 6.7 pct of the total increase, while the group 18 to 44 years old accounted for 736,000 or 4.3 pct of the total increase. Within the 18-44 age group however, the number 18 to 24 years old declined by nearly a million and the number 25 to 44 increased by 1.7 million.

The excess of females over males in the total population increased from a little over half a million in 1950 to nearly a million and a half in 1956. While boys now exceed girls by about a million in the group under 18 years of age,

women outnumber men by nearly two and a half million among those 18 years of age and over and more than a million of this excess is in the age group 65 years and over.

As it has for many decades, the Pacific division, with a gain of 23 pct between 1950 and 1956, continues to pace the Nation's rate (10.9 pct) of population growth but the numbers have increased substantially in practically all of the geographic divisions of the country. The East South Central States with 2.3 pct and New England with 4.3 pct have had the smallest percentage gains but they too have shown growth despite substantial out-migration. Between these extremes, three divisions have exceeded the U. S. growth

rate. These are the Mountain, South Atlantic, and East North Central divisions. The remaining three, with a rate growth below the national average, are the West South Central, Middle Atlantic, and West North Central divisions.

#### Big gains in West

Regionally, largest proportion of the total U. S. population resides in the South, 30.9 pct. The proportions for the other three major regions are North Central, 29.5 pct; Northeast, 25.3 pct; and West, 14.3 pct. Thus, it may be noted, that despite the large population gain in the West, the other regions still remain the bigger markets in terms of total number of consumers.

**THE FAMILY-FORMING AGE (18 to 24) is big demand age for metalworking's products . . . If migration continues at the present rate you can expect . . .**  
(000 omitted)

	1958	1963	1968	1973
<b>UNITED STATES</b>	<b>15,481</b>	<b>18,055</b>	<b>22,790</b>	<b>26,360</b>
<b>Northeast</b>	<b>3,600</b>	<b>4,235</b>	<b>5,344</b>	<b>6,046</b>
<b>North Central</b>	<b>4,384</b>	<b>5,052</b>	<b>6,289</b>	<b>7,538</b>
<b>South</b>	<b>5,380</b>	<b>6,008</b>	<b>7,370</b>	<b>8,125</b>
<b>West</b>	<b>2,117</b>	<b>2,760</b>	<b>3,787</b>	<b>4,651</b>



Further concentration of the population in the Standard Metropolitan Areas (SMA) of the country is revealed by a Census study based on March 1956 data for the civilian population. This study indicated that of the total estimated gain of nearly 15 million civilian population during the six years following the 1950 Census, about 85 pct was within the 168 SMA's as constituted in that census, and the remaining 15 pct was distributed over the rest of the country.

The Census Bureau is not in position to say how equable the growth has been among the different population centers or within these areas, but indications are that the greatest growth in the areas has been in the SMA territory outside the central cities. Special censuses in the Los Angeles area in the last two years have shown a greater growth rate for

places outside the central city in Los Angeles County although the city also has experienced further rapid growth. Census surveys made for civil defense planning in four metropolitan areas late in 1955 revealed similar trends. In the Houston area, the rate of growth outside the central city was four times that of Houston city proper. In the Washington, D. C., area the growth rate outside the capital city was nine times as great in the Maryland part and six times as great in the Virginia portion of the SMA. For the St. Louis area, there was a small loss in the city's population but an increase of more than 25 pct in the balance of the SMA. In the Milwaukee area, the population of the central city was up by almost as large a percent as in the balance of Milwaukee County but the proportions of change reflect the effect of territorial annexations made by the city between 1950 and 1956.

Another important measure for those who plan production and distribution of goods, is the number of households (the equivalent of occupied dwelling units). In March 1956, there were an estimated 48.8 million of these. Urban and rural nonfarm households have increased by about a million a year while rural households have dropped 100,000 yearly since 1950.

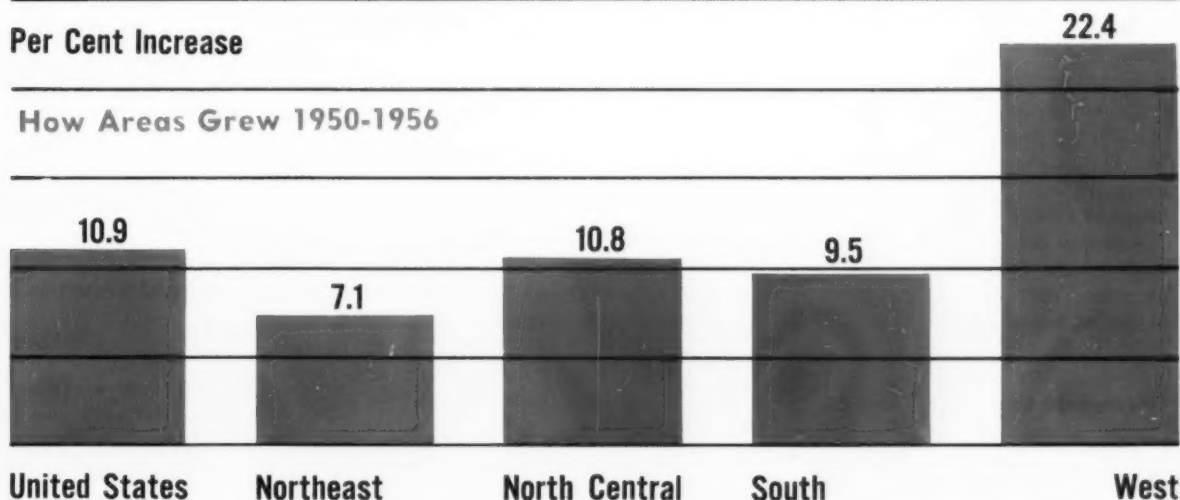
#### More working wives

The average annual increase during the next 20 years in the number of households may range between 700,000 on the low side to nearly a million on the high side, according to projections recently published by the Census Bureau. For 1960, these projections indicate a total of between 50.5 million and 52 million households, while for 1975 the range is between 61.5 million and 67.5 million households.

In the summer of 1956, civilian

### Per Cent Increase

#### How Areas Grew 1950-1956



(Above) Population increases by area are important . . . Here are the changes in the last six year . . .

(Right) 1950 totals are from April 1 census; 1956 data are estimates as of July 1. Here are the details with 000 omitted:

	1950	1956	Pct Increase
UNITED STATES	150,897	167,191	10.9
NORTHEAST	39,478	42,273	7.1
New England	9,314	9,711	4.3
Middle Atlantic	30,164	32,562	8.0
NORTH CENTRAL	44,461	49,278	10.8
East North Central	30,399	34,221	12.6
West North Central	14,061	15,057	7.1
SOUTH	47,197	51,694	9.5
South Atlantic	21,182	23,971	13.2
East South Central	11,477	11,743	2.3
West South Central	14,538	15,980	9.9
WEST	19,582	23,945	22.4
Mountain	5,075	6,127	20.7
Pacific	14,487	17,818	23.0

## POPULATION

Continued

employment reached an all-time high of 66.8 million, while unemployment was at the year's low of 2 million in September, down somewhat more than seasonally.

During the first three quarters of 1956, monthly civilian employment averaged 64.9 million, including 44.2 million men and 20.7 million women with jobs. There has been a steady increase in the number of working wives.

**Labor force grows**

Assuming that high employment levels will continue for the next 20 years and that there will be no large-scale war or other catastrophe, the Census Bureau has projected estimates of the total labor force for five-year intervals to 1975. Four series of projections were made, based on varying assumptions about the rates of change in labor force participation of men and women in the various age groups over 14 years old. For 1960, these projections envision a total labor force ranging in size from an annual average of 72.3 million to 73.4 million. For 1975, the projected totals for the annual average labor force are in the range of 89.8 to 93.7 million.

Another set of Census projections covers the population 18 to 24 years old to 1973 when the babies of today will be old enough

**Manufacturing employment jumped ahead between 1947 and 1954—due mainly to booming business . . . Actually, working age group did not increase as rapidly as youngsters and pensioners . . .**

Figures show per cent increase 1947-1954. U. S. Total in 1954 was 16.1 million.

	Manufacturing Employment	Population
United States	12.9%	12.4%
Northeast	6.0	10.7
New England	— 1.7	8.0
Middle Atlantic	8.9	11.5
North Central	9.1	11.2
East North Central	6.7	12.5
West North Central	22.1	8.3
South	19.9	10.1
South Atlantic	16.9	13.4
East South Central	15.1	4.1
West South Central	33.9	10.0
West	49.4	24.4
Mountain	36.4	24.6
Pacific	51.4	24.4

to enter college. It is from this group that industry will draw its new craftsmen, engineers, scientists and candidates for management positions. As the dip in their present number is overcome, down to about 15 million because of the low birth rates in the 1930's, they will number about 18 million in 1963, over 22 million in 1968, and between 25 and 26 million in 1973.

Results of the 1954 Census of Manufactures published during the last year reveal very substan-

tial gains over 1947 Census totals in manufacturing employment in the South and the West, which comes as no surprise to readers of THE IRON AGE. Manufacturing employment increased at a rate slightly greater than population growth for the country as a whole.

In summation, the prospects for bigger markets for both industrial and consumer goods, as indicated by Census figures and projections, are excellent.

**"Household formations" are big factor in growth of metalworking's markets . . . Estimated increase between now and 1975 is from 26 to 38 pct. . . .**

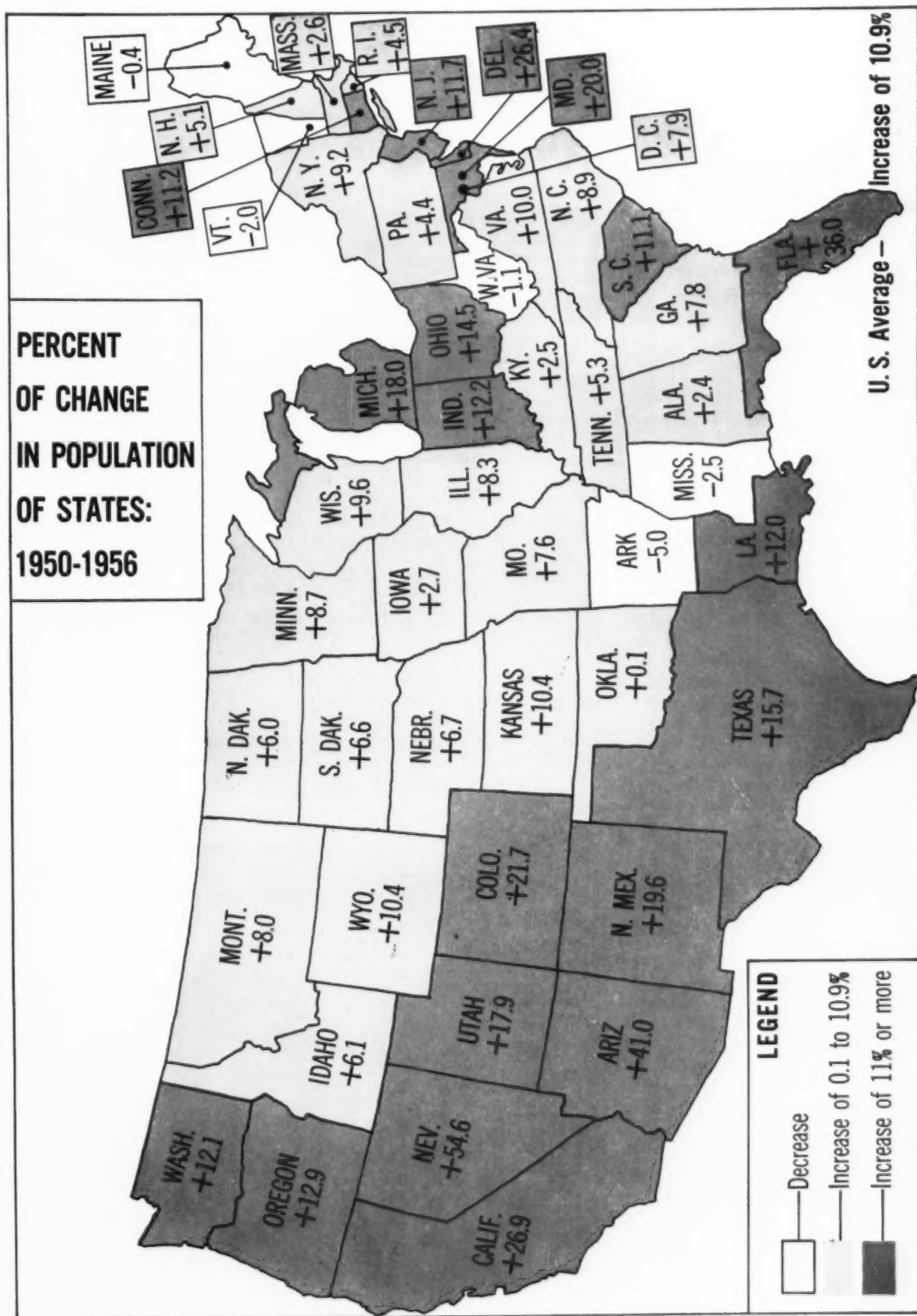
Chart shows number of U. S. households, 1956 and projected growth. (000 omitted)

Date	Current Estimate	Projections <sup>1</sup>			
		Series I	Series II	Series III	Series IV
April 1947	39,107				
March 1950	43,554				
April 1955	47,788				
April 1956	48,785				
July 1960		51,838	51,573	51,060	50,499
July 1965		56,145	55,579	54,474	53,345
July 1970		61,378	60,762	58,988	57,110
July 1975		67,378	66,480	64,312	61,584
Increase 1956 to 1975		18,593	17,695	15,527	12,799
Percent increase		38.1	36.3	31.6	26.2

<sup>1</sup> Series I based on 1947-1955 rate of change in percent single, percent who are household heads, etc.

Series II based on 1950-1955 rate of change. Series III based on half the average rates of change between 1950 and 1955.

Series IV based on assumption that there will be no change in relevant measures from 1955.



## STEEL

# The Next Five Years in Steel

**Steel production may exceed 140 million tons in a peak year during the 1957-1961 period. But steel demand is likely to grow more slowly, on the average, than during the past decade.**

**Possibility of a steel recession of greater than 1954 proportions cannot be ruled out. Capital goods will remain steel's No. 1 market.**

By Thomas Dimond,  
Economist, de Vegh & Co.,  
New York, N. Y.

For the past decade, the steel industry has enjoyed an era of remarkable growth, interrupted only by two minor business recessions and four prolonged strikes. Steel consumption has risen from 79 million ingot tons in 1947 to about 115 million tons in 1956—an average annual increase of about 4 pct. Capacity has been boosted 36 million tons since the end of World War II. Moreover, steel has maintained its position as the basic material in our industrial economy. With iron it accounts for 80 pct of all the metals consumed in the United States.

Can the steel industry sustain this rate of growth during the next five years? What is the outlook for the major steel-consuming industries? What changes may occur in steel markets? Will competitive materials like aluminum and plastics become a serious threat? And, most important of all, will the steel industry be able to avoid a major recession?

These are some of the questions that are worth exploring in looking at what may happen to the steel industry during the next five years.

There are three main factors to consider in the 1957-61 outlook

for steel: (1) What may happen to general business during the next five years—because basically, the amount of steel used depends upon the volume of general business; (2) more particularly, what will be the level of activity in the various steel consuming industries, such as construction, the automobile, etc.; and (3) what changes may take place in the use of steel.

As to the outlook for general business, many economists agree that the economy can sustain an average rate of growth of between 3 and 4 pct a year, barring a major recession. In support of this view there are such continuing growth forces as the upsurge in population, the nationwide movement to the suburbs, the upgrading of family incomes (and consequently, spending habits) and the accelerated rate of discovery of new products and processes due to increasing research and development.

At the same time, the possibility

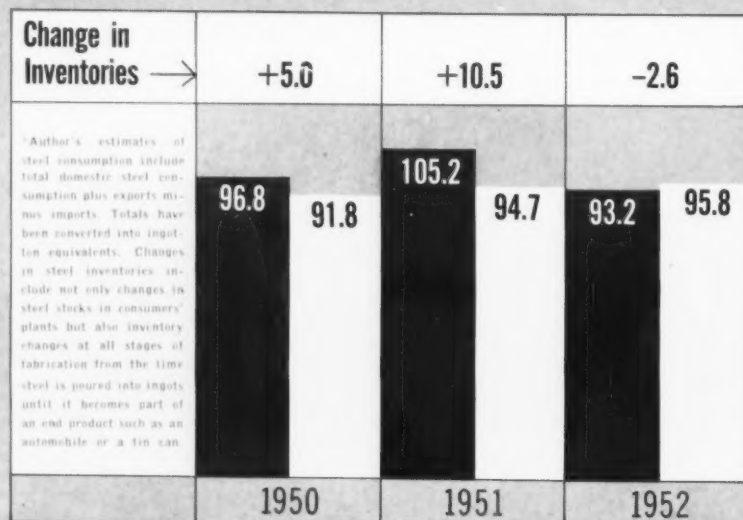
of a business recession during the next five years of greater than 1954 proportions cannot be ruled out. The present boom has lasted ten years, with only two minor readjustments. There is no guarantee that economic excesses, imbalances and mistakes in monetary policies, which have led to past recessions, can not happen again.

Whether or not the steel industry will be able to match the rate of growth of general business

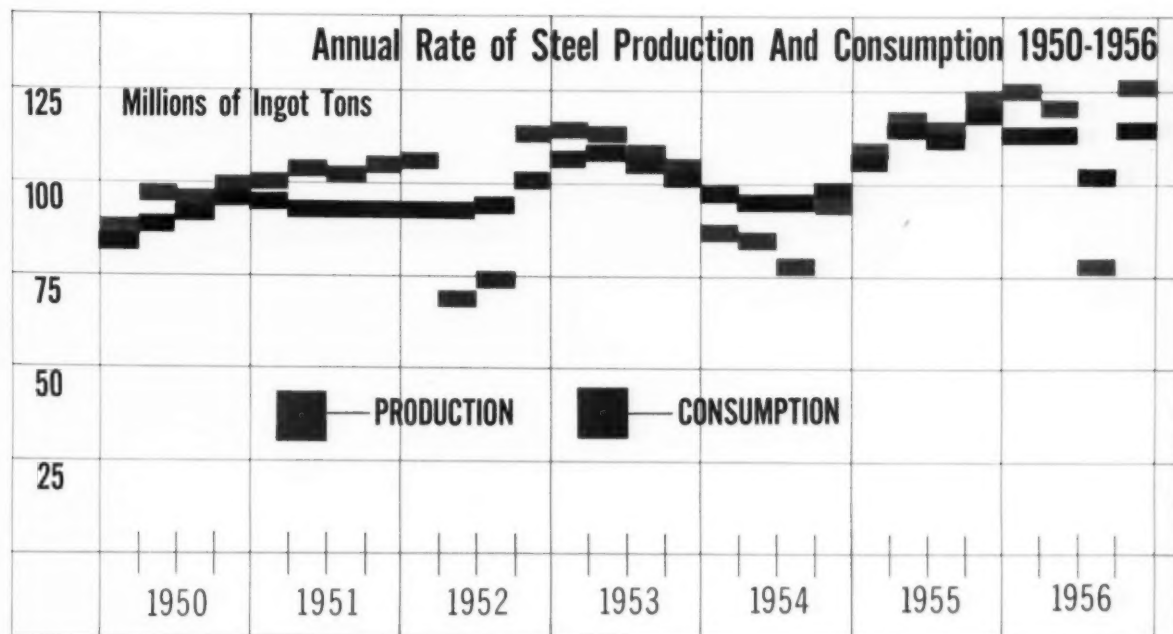
THOMAS DIMOND, economist of de Vegh & Co., investment counsel, is well known as a steel analyst. He was formerly manager of commercial research for The Youngstown Sheet & Tube Co. He began his studies of steel consumption and market developments while associated with Lionel D. Edie & Co. before going to Youngstown.

during the next five years will depend primarily on what happens to the steel-consuming industries

## Steel Production And Consumption Millions of Ingot Tons







in the 1957-61 period. These industries have grown rapidly during the past decade—much faster than the overall economy. There is evidence to suggest that their average rate of growth will be slower in the future.

#### Spotlight on capital goods

The steel-consuming industries can be divided into 3 broad groups: (1) Capital goods, including construction and producers'

durable equipment; (2) consumer goods, including automobiles, appliances, and metal cans; and (3) other uses, such as exports, and miscellaneous domestic uses (see chart).

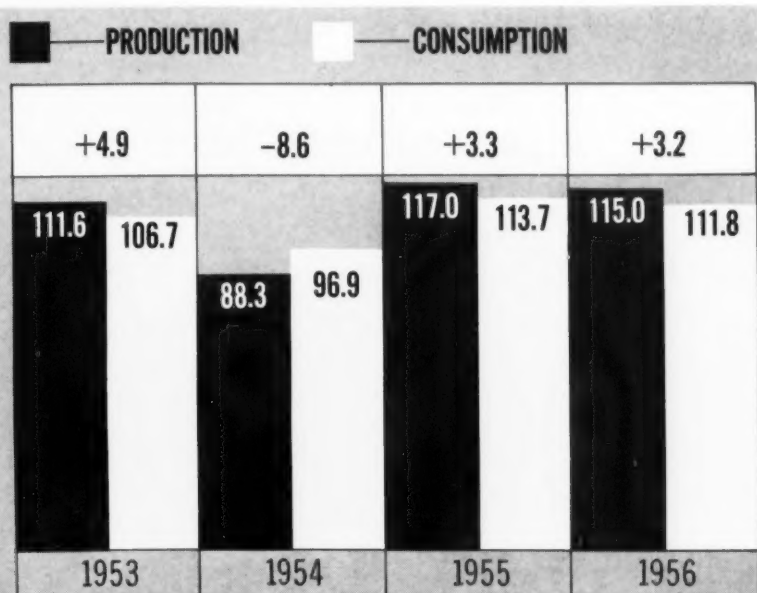
Despite the attention attracted by the growth in consumer goods markets for steel in the postwar period, the capital goods industries remain by far the No. 1 market for steel. They accounted for 58 pct of total steel consump-

tion in 1956. Consumer goods industries, as a group, took 33 pct—with balance going for exports and miscellaneous uses.

In the future, the capital goods industries are likely to grow more in line with the overall economy, rather than at the faster pace they set during the past decade. Capital goods now represent about the same proportion of total national output as in 1929; other segments of the economy, such as services, are in a rising trend. However, highway construction, shipbuilding, and oil-well drilling are particularly bright spots in the capital goods outlook.

#### Autos may grow more slowly

The automobile industry, steel's No. 2 customer, is also expected to grow more slowly in the future—an average of about 4 pct a year, starting with 1956 sales of about 6 million passenger cars. This compares with 6 pct annual growth since 1947. Automobiles already take more than half again as large a share of the consumers' dollar as they did just before World War II. On the other hand, the trend to the suburbs with greater dependence on automobiles, improved highways, and, above all, the industry's ingenuity in making last year's car obsolete, are likely to enable the industry



## STEEL

Continued

to retain its present share of consumer spending.

The outlook for other steel-consuming industries is varied. Appliances may grow with consumer incomes. Exports should increase gradually. But the outlook for agriculture is not promising.

All in all, the steel-consuming industries are likely to have a slightly slower rate of growth than the overall economy during the next five years—partly offsetting their faster rate of growth during the past decade. A major increase in defense spending would raise these projections substantially.

In addition to the outlook for general business and the steel-consuming industries, a third factor which will affect steel demand between 1957 and 1961 is possible future changes in the use of steel.

During the past decade, the steel-consuming industries as a whole have gradually reduced

their use of steel per unit of output. Partly, this has been due to greater economy in the use of steel—for example, the trend toward reinforced concrete construction. Partly, it has been due to a change in product mix in some of these industries. These include the relative increase in residential construction between 1950 and 1955 and the growing proportion of electronics products in appliances.

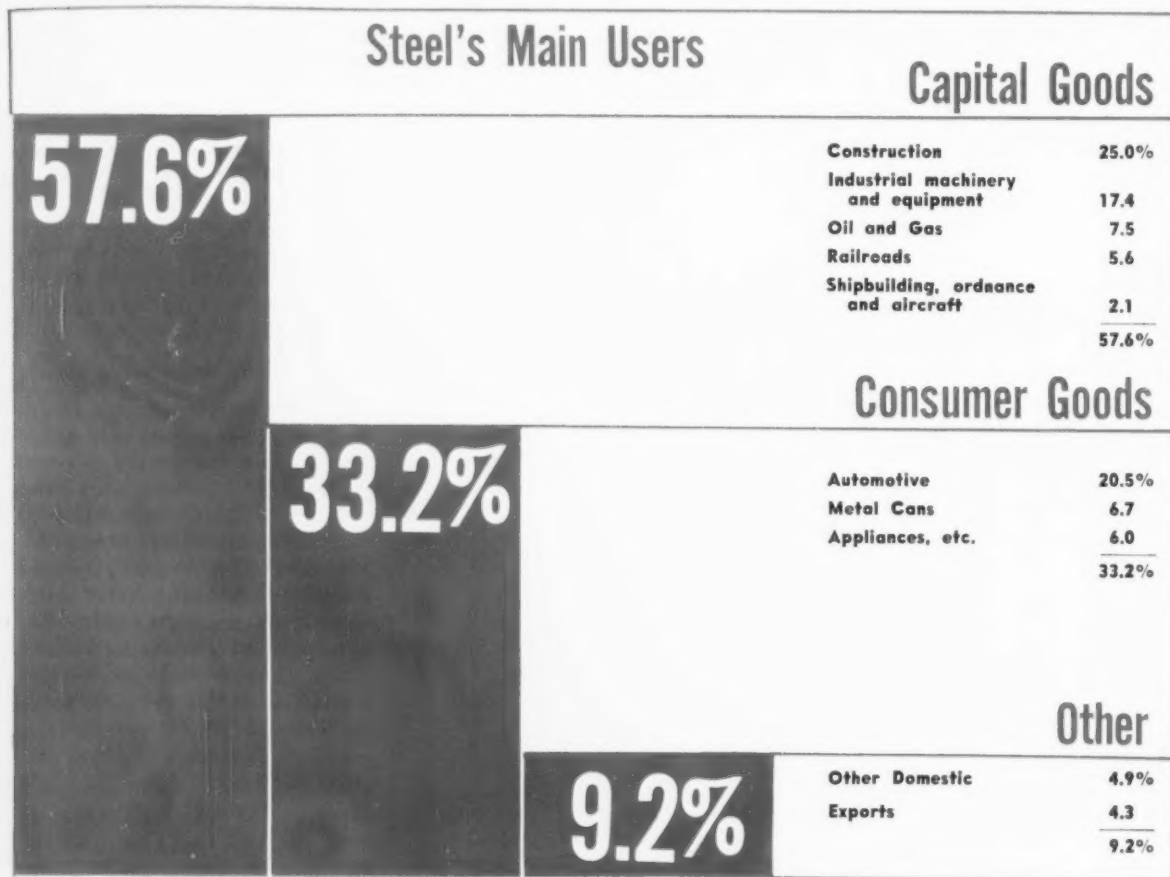
## Search for new markets

Will this trend continue? Present indications are that it will. In the machinery and equipment industries, for example, an increasing proportion of the value of the final product will be represented by expensive controls, instruments and electronic equipment and less by steel. In construction, the shortage of structural steel is stimulating the use of pre-stressed concrete and other building techniques which economize on the use of steel. In the automotive field, there are signs

that the passenger car may have reached its practical weight limit, although this point is debatable.

Will this gradual trend toward the use of less steel be offset in part by the growth of new markets for steel? Undoubtedly, new markets will be developed, and some present ones greatly expanded. For example, the growth in offshore oil-well drilling offers a rapidly growing market. The potential market for steel for canned soft drinks is very large, although acceptance to date has been disappointing. Also, we may see more steel used in combination with other materials to obtain the advantages of both—such as plastic coated sheets for appliances and homebuilding and aluminum-coated sheets for outdoor use.

Competition from aluminum, plastics and other materials is not likely to be a serious factor in the steel outlook during the next five years. Competition will be principally in the fields of packaging, household equipment, building and to some extent in



Percent of Total Steel Consumption in 1956. (Author's Estimate)

the automobile industry. But in the big tonnage markets, such as automobile body stampings, steel's far lower cost rules out serious competition, at least for the next five years.

On the basis of the above assumptions in regard to the outlook for (1) general business, (2) the level of activity of the major steel-consuming industries, and (3) possible changes in the use of steel, steel demand might be expected to grow at an average rate of between 2½ and 3 pct a year during the next five years—less than the expected rate of growth in the overall economy, and considerably less than the rate of growth in steel demand during the past decade.

This would mean that steel demand might increase from an annual average of 106 million tons in the years 1953-55 to between 125 and 130 million tons in 1961. And since actual steel production may vary as much as 10 pct or more either way from the projected normal demand—depending



**BATTLE FOR FUTURE MARKETS** will depend in part on ability of steel companies to hold steelmaking costs in line. Photo shows oxygen converters at McLouth Steel Corp., one promising avenue toward lower steelmaking costs. Other possibilities: H-iron, continuous casting.

### Capital Goods

Less glamorous than consumer goods, these industries again took the bulk of 1956 steel output. Product emphasis is on heavy goods: plates, structurals, pipe. World crises will keep the pressure on most products for these industries.

### Consumer Goods

The automotive industry's share of 1956 output was off about 2 percentage points from record '55. It is in the consumer goods field that steel marketing men see the best chance for merchandising to pay dividends; new products and techniques can mean higher steel sales.

### Other

Export sales in '56 about held their own despite growing imports from Europe and Japan.

on general business conditions and changes in steel inventories—production might exceed 140 million tons in a peak year during the period 1957-61. Note that all of these projections assume relatively high levels of business activity, but do not take into account the increase in steel demand which would follow a large boost in defense spending.

### For More Data

There is a growing conviction that the steel industry can avoid the violent cyclical fluctuations which have plagued it in the past. Insofar as there are many more safeguards today against a general business depression, this view is correct.

But, lest we grow overconfident, we should recall that steel production is still twice as sensitive to cyclical fluctuations as industrial production in general. In other words, for every 1 pct variation in industrial production, steel production varies 2 pct, on the average—and this sensitivity in steel production has not diminished during the past 30 years. Partly, this is because steel de-

mand is tied to durable goods production; partly it is because steel users typically overbuy in boom years and liquidate steel inventories in recession years. (See table "Steel Production and Steel Consumption.")

In the future, steel production will continue to fluctuate more widely than industrial production in general. Whether or not the steel industry will be able to avoid a serious recession will depend on what happens to general business during the next five years. However, two encouraging factors from the standpoint of steel stability are the current three year steel labor contract and a growing inclination by steel users to gear their purchases more closely to their actual requirements.

In the "Price and Production Data" section, toward the back of this issue, you'll find information on U. S. and world steel production, plus financial data on major steel companies. It also lists monthly and annual prices for major steel products.



## ALUMINUM: Plan Now For New

**Current aluminum expansion will help all segments of the industry. With shortage fears ended, producers and fabricators will introduce products they've had to table until now. Manufacturers can give designers the green light to use more aluminum in their products.**

**Result: An opportunity to share in a 50-pct increase in the market during the next few years.**

Aluminum demand has grown so fast during the past decade that supply has at times not been able to keep up. In 1955, a sharp surge in demand resulted in a tight supply period. Following a record first quarter in 1956, demand declined during the second and third quarters and picked up again in the fourth. Supply was thus able to catch up with demand during 1956 and inventories were replenished.

Since the end of World War II the aluminum industry has grown much faster than any other major metal industry in the United

States. On a tonnage basis, only iron and steel exceed it today. The gain has been spectacular, as a look at aluminum production in relation to the Federal Reserve Board industrial production index will show (see chart).

And on a *volumetric* basis, more aluminum is produced than all the other major nonferrous metals combined.

The outlook for aluminum in 1957 appears to be good, assuming that general business activity continues at the growth rate of the past few years. Consumption, as shown by shipments of aluminum products to consumers (see chart), is expected to be up about 10 pct over 1956, reaching 2.3 million tons. The domestic supply (primary production, imports and scrap) is expected to exceed 2.5 million tons. It appears now that supply will be ample to fulfill customer needs this year.

The longer term outlook for aluminum, embracing the years 1958-60, appears to be excellent. The primary production capacity of the industry, which was doubled to meet Korean war demands, was expanded still more during the past

two years. Further expansion is now in progress. New facilities under construction or planned will boost the nation's current aluminum smelting capacity by about 40 pct. Most of this new capacity will begin production during 1958 and will be capable of complete operation in 1959. The total supply of metal from all sources in 1958 and 1959 is expected to reach 3.0 and 3.4 million tons, respectively.

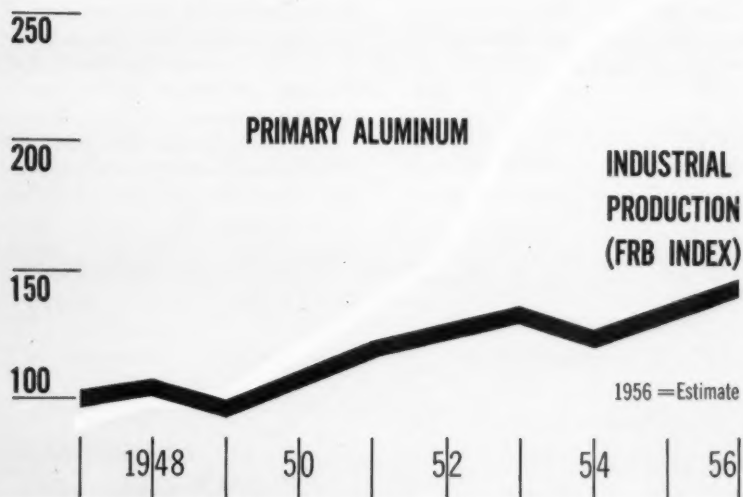
There are many reasons for the rapid growth in aluminum use during the past decade. A big one, of course, is that the metal has an amazing bundle of properties which permit it to do many jobs extremely well, often better than the material it is replacing. Another reason aluminum has been able to get its foot in the customer's door—and remain there after it has proved satisfactory—is simply that its price is lower than that of many

By Harry L. Smith, Jr.  
Vice-President in Charge of  
Commercial Research &  
Sales Development  
Aluminum Co. of America



## Aluminum Outpaces U. S. Industrial Output

Index (1947-1949=100)



shipments). Shipments of aluminum castings, which are about a fourth of all aluminum product shipments, are not included in this table, nor are shipments for destructive or deoxidizing uses.

An attempt has been made to estimate aluminum distribution by markets for 1955 and 1960. (See chart "How Aluminum Markets May Change"). Four of the categories in the wrought products table have been combined with others or further distributed to their estimated end use and two new categories added. The latter chart, unlike that on wrought products, includes castings as well as destructive and deoxidizing uses. Total consumption is expected to increase from about 2 million tons in 1955 to well over 3 million tons in 1960, at least 50 pct hike in five years.

### Color opens big market

The No. 1 aluminum market now is the building and construction field, which used 415,000 tons in 1955. By 1960 this field is expected to use 700,000 tons, a 68 pct increase over 1955. Recent introduction of colored finishes for exterior applications of aluminum opens up vast new horizons in the design field. As a result, aluminum wall panels for multi-story buildings are being specified by more

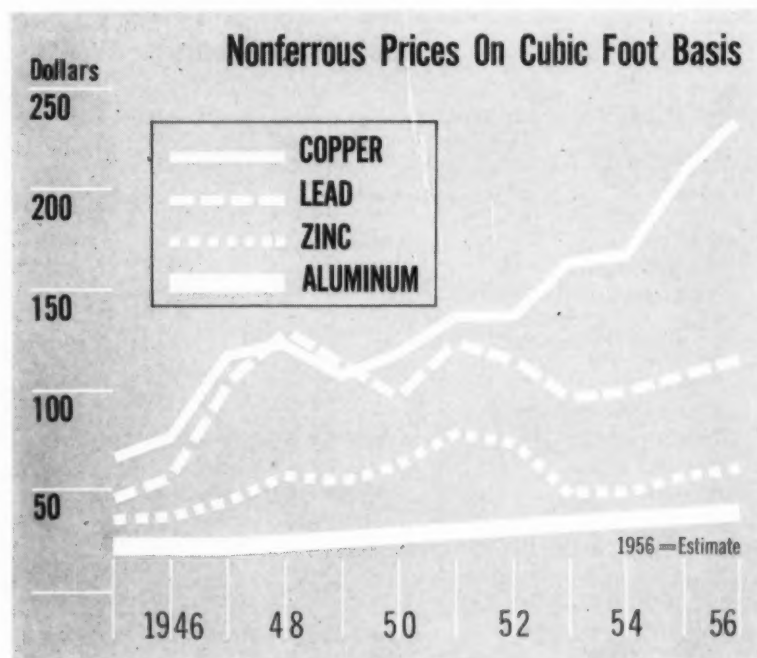
## Markets

other competitive materials. Immediately after World War II the price of aluminum pig did not go up for nearly three years as producers resisted the inflationary trend in an effort to encourage its use. Comparisons of average 1948 prices with those of 1945 show that aluminum had advanced only 3 pct. On the other hand lead was up 177 pct, copper 87 pct, zinc 64 pct, steel 36 pct and all wholesale commodities, 51 pct.

Since 1948, increasing labor rates and rising costs of materials and services forced a number of advances in aluminum prices. Yet the metal has constantly remained cheaper than other major nonferrous metals, either on an actual weight basis or on a volume basis. One way to compare prices of these metals is to allow for the differences in specific gravity and convert their average annual prices to a cubic foot basis (see chart). Since 1946 the price of copper has ranged from 3 to 5½ times as much as an equal volume of aluminum; lead has ranged from 2½ to 5 times. During the same period the price of zinc came closest to aluminum: at one time it was only

37 pct more expensive but it ranged as high as 2½ times the price of an equal volume of aluminum. This favorable price comparison with other nonferrous metals will probably continue.

The market distribution pattern for aluminum during each of the past three years has been similar, according to latest published data (see table of wrought products



Avg Annual Price, \$ per Cu Ft

## ALUMINUM

Continued

and more architects. Aluminum roofing and siding sheet for industrial buildings is gaining. More than half of all commercial buildings now use aluminum windows, and a rapidly increasing share of the residential window market is going to aluminum. The use of the metal for clapboard siding in home construction promises to grow

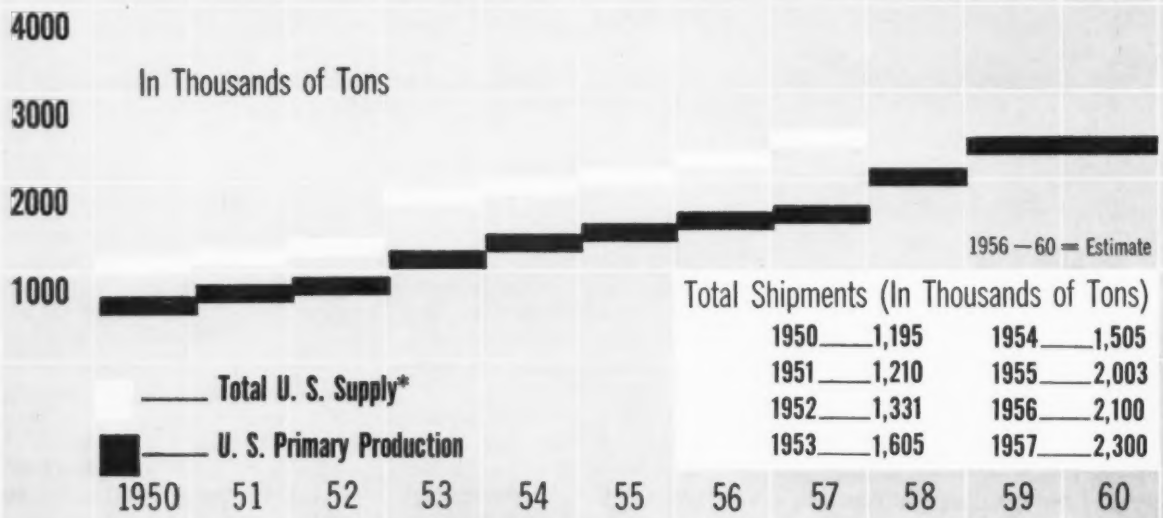
rapidly. In highway construction, aluminum railings, signs and lighting standards should account for increasing tonnage.

The second largest market for aluminum is the transportation industry. Including aircraft, the transportation industry used 390,000 tons of aluminum in 1955, or 19.5 pct of total consumption. This is expected to rise to 550,000 tons by 1960. The largest growing sin-

gle market for aluminum in this industry is the automobile. Average usage during 1956 was 35.2 lb per car. The 1957 models use more aluminum for a growing number of exterior and interior trim applications. A reasonable target for practical automotive applications is 300 lb per car.

Consumer durable goods are the third largest market for aluminum. They took 236,000 tons of metal in

## U. S. Aluminum Supply And Total Shipments, of Aluminum Products To Consumers



\*Includes Imports and Secondary Recovery.

### WROUGHT ALUMINUM PRODUCT SHIPMENTS TO CONSUMERS

In Net Tons, Castings and Destructive Uses Excluded

End Use	1954				1955				1956	
	1st Half	Pct	2nd Half	Pct	1st Half	Pct	2nd Half	Pct	1st Half	Pct
Building Materials	76,763.5	17.2	90,041.5	20.3	110,360.5	19.2	131,898.5	20.2	129,353	19.0
Consumer Durable Goods	54,565	12.2	55,915.5	11.5	82,664	13.3	75,684.5	11.6	87,970	12.9
Transportation	79,932.5	17.9	82,450.5	16.9	103,336	16.6	114,753	17.5	118,147	17.4
Electrical	39,662.5	8.9	40,239	8.3	47,229	7.6	50,553	7.7	52,658	7.8
Machinery & Equipment	27,689.5	6.2	19,999.5	4.1	40,369.5	6.5	30,628.5	4.7	42,029	6.2
Packaging & Containers	25,264.5	5.7	27,798.5	5.7	30,448	4.9	32,611	5.0	30,218	4.5
Shipments for Conversion into Primary										
Wrought Products	36,800.5	8.2	48,015.5	9.9	53,050	8.5	64,430.5	9.8	65,849	9.7
Distributors & Jobbers	68,183.5	15.2	65,916	13.5	90,003	14.5	100,282.5	15.3	113,743	16.7
Exports	3,379	0.8	5,561.5	1.1	8,205	1.3	4,925.5	0.8	6,085	0.9
Military (direct military and AEC)	11,660	2.6	13,960.5	2.9	11,363	1.8	10,791.5	1.6	8,836	1.0
All other identified end uses	13,759.5	3.1	15,303.5	3.1	20,145.5	3.2	18,059.5	2.8	16,495	2.4
Unidentified end uses	9,220	2.0	13,342.5	2.7	15,804.5	2.6	19,470	3.0	10,261	1.5
TOTAL	446,900	100%	467,644	100%	621,928	100%	664,488	100%	679,644	100%

Source: The Aluminum Assn.

1955, or 11.8 pct of the total. This market is expected to consume 337,500 tons by 1960. Household appliances, cooking utensils and giftware, and furniture are the principal users of aluminum among consumer durables.

The fourth largest market for aluminum is the electrical and communications field, which is expected to show a 61 pct increase between 1955 and 1960, consuming 325,000 tons of metal in the latter year. Almost all high voltage transmission lines are now specified in aluminum; the metal is being used in increasing quantities for secondary distribution lines. Aluminum is also making real progress in bus bars for commercial buildings and in telephone exchange cable.

The next largest market for aluminum is general machinery and equipment, which covers a great many applications. This use of aluminum is expected to grow from 114,000 tons in 1955 to 175,000



tons by 1960. Among the many growing applications in this category are heat exchangers and condensers, textile and petroleum refining machinery and equipment, irrigation pipe and fittings, materials handling equipment, instruments, tools and fasteners.

The eighth largest aluminum market, and the fastest growing, is containers and packaging. Between 1955 and 1960 consumption of aluminum by this market is expected to increase by 87 pct, to 162,500 tons. Aluminum rigid foil containers and flexible wrappers are being used to package a rapidly growing variety of products. Potential demand from the container market is enormous; Alcoa believes that aluminum cans will ultimately be used for many purposes.

## HOW ALUMINUM MARKETS MAY CHANGE

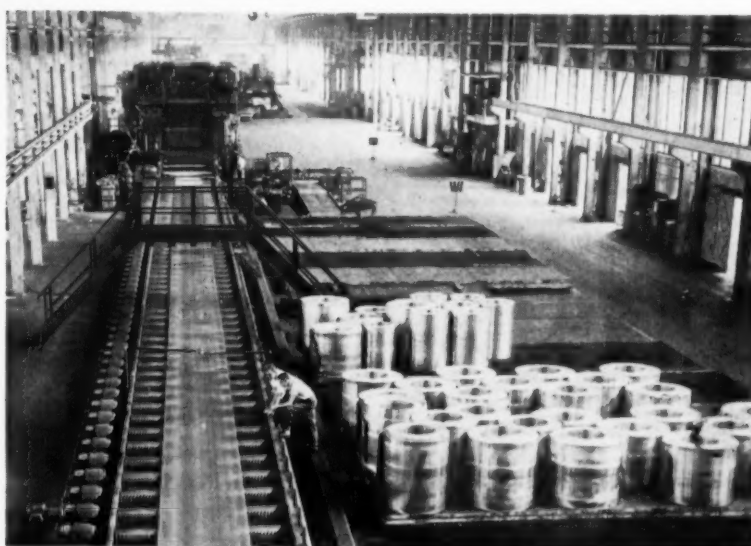
Market	1955 Percent	1960 Percent
Containers & Packaging	4.3	5.4
Machinery & Equipment	5.7	5.8
Destructive & Deoxidizing	5.8	4.2
Aircraft (including civilian)	7.1	6.3
Electrical & Communication	10.0	10.8
Consumer Durable Goods	11.8	11.3
Transportation (no aircraft)	12.4	12.1
Miscellaneous & Unidentified	19.8	18.3
Building & Construction	20.8	23.3
Other Defense	2.3	2.5
<b>Total</b>	<b>100%</b>	<b>100%</b>

Estimated by Aluminum Co. of America

Destructive and deoxidizing uses are expected to show only a moderate increase. By 1960 consumption of aluminum for such uses will probably reach about 125,000 tons.

Nearly a fifth of estimated aluminum consumption in 1960 has been reserved for the last category, miscellaneous and unidentified uses. Some 550,000 tons of aluminum should go into this by 1960.

With supply plentiful in the next few years, Alcoa believes that aluminum consumption will continue to grow at a much faster rate than the national economy. The company estimates that domestic consumption between 1960 and 1975 will increase from a minimum of 3 million tons to about 5 million tons, nearly 2½ times the current level.



ALUMINUM SHEET finds a big market in construction, transportation and consumer durable goods in that order. Here hot-rolled aluminum strip moves along runout table at Alcoa's Davenport, Ia., works.

## COPPER

## Where Copper Output Goes

INDUSTRY DIVISION	PERCENT *		
Electric Lines	19	Electronics	2
Electrical equipment	18	General industrial equipment	2
Construction equipment and Materials	14	Railroad equipment	2
Motor Vehicles	8	Scientific & technical equipment	2
General components	6	Engines and turbines	1
Consumer durable Goods	3	Metalworking equipment	1
Miscellaneous industries	3	Military	17**
		Undistributed	2
TOTAL—100 PERCENT			

Source: Computed from Copper Division, B.D.S.A. (U. S. Dept. of Commerce) Business Reports. Supplemented by Copper & Brass Research Assn. regroupings and estimates.

\*The markets for copper cannot be accurately pinpointed. However, a reasonably close approximation is provided in this break-

down dated March 7, 1956. Although these categories and percentages were originally estimated in 1952, they have recently been reviewed by the Copper & Brass Research Assn. It is believed they fairly represent 1955 copper consumption, as closely as can be determined. \*\*Conjectural

## Copper Prepares for Bright Future

By T. E. Veltfort, Manager, Copper & Brass Research Assn., New York.

**Copper producing capacity of the free world will soar by 32 pct during the next 5 years.**

**This should help stabilize world markets and meet increased demands.**

**It also opens the way for metalworkers to capitalize on new uses, could alter the substitution picture.**

The copper industry's drive to remove relative scarcity from its market picture will probably be the biggest single contribution to a more stable copper market. The industry is expanding on two fronts—foreign and domestic—to increase copper mine capacity. Naturally, it takes time before ex-

pansion plans can be turned into actual metal, but world copper supply is elastic and can be expanded.

It's well to remember those two things about copper: its international character and its elasticity.

First, on the international scene. The wise copper user in the United States looks at copper in relation to world conditions. True, the United States supplies much of its own needs. But with only about 6 pct of the world's population, it consumes about 45 pct of the world's copper production; the United States imports about a third of its copper needs. Major worldwide factors affecting copper are listed in the accompanying box, "The International Metal."

By elasticity, copper people mean this: Copper mining is essentially an earth-moving prob-



**MANY TONS of overburden are removed in stripping operations like this at Miami (Ariz) Copper Co. mine.**

lem; the identical economics of earth moving apply. Cut-off point for a given property depends on the going market price at a given time; even a modest price increase can make it worth mining large



untapped reserves. Improved mining methods also make for more copper; lower and lower grades of ore can now be worked because mining equipment is getting more efficient.

Recent changes in world conditions and in the copper industry itself make it a bit easier to see some factors that will affect copper's future. If we make a major assumption—no major depression or major war—we can have a closer look at these probable developments.

At best, the industry has only a rough idea of the extent of world copper resources. Aside from the international problems, what about mines and reserves? It is quite possible that great new ore bodies—unknown today—may be discovered in current exploration programs. Even as expansion in all major copper-producing areas of the world goes on, copper people are trying new techniques and spending a lot more money for exploration and evaluation of new discoveries.

We can estimate increases in copper mine capacity which will be added by new mine facilities now being installed. These appear in the table "Copper Mine Capacity." These data were assembled from reports of current planning; they assume there will be no



OPEN PIT mining at 10,000-ft at Anaconda copper mine in Chile.

work stoppage anywhere from any cause. They indicate a free world mine capacity of almost four million tons of copper by 1962, compared to actual production of just under three million tons in 1955.

There is a good chance that capacity can be further increased if demand warrants. Opening of new mines and expansion of existing mines in Canada, Africa and South America could add well over 100,000 tons of copper to the predicted increase in capacity. At this writing these projects are being considered, awaiting future developments.

Like many another commodity, copper has had its short-term ups and downs. But long-range esti-

mates are optimistic—even better than they looked a year ago. There are some good basic reasons for increasing optimism; the long-range outlook for industrial production is encouraging; gross national product is climbing and world population is increasing rapidly.

Obviously, population growth will influence copper consumption as it does consumption of most



COPPER companies are constantly looking for new sources. Here, Anaconda geologists check Montana site.

materials. And it is reasonable to assume that future growth will at least keep pace with the past. So, because it is used in housing, power generation, equipment and machinery, it will probably continue a proportional growth. (See

## The International Metal

■ Demand for all materials, including copper, is increasing. Underdeveloped nations are seeking to develop machine technologies; more advanced nations want to use newer, more complex equipment and machines. Throughout the world, power plants are being expanded to match the growing demand.

■ With demand growing here and abroad, the United States will undoubtedly import copper to meet its requirements—largely from the Western Hemisphere. U. S. domestic mine output will probably remain fairly free from interruption as a result of 3-year

labor contracts signed in 1956 by major producers.

■ As other countries strive to match U. S. economic and technical standards, copper will be subjected to international trade regulators: Currency convertibility, trade agreements, export-import licensing, governmental stockpiling and the like.

■ As in the recent past, American copper users will have to reckon with foreign competition for copper supplies. For example, when Europe needed more copper in 1955, the United States was in effect bidding for the

same copper, and felt the pinch of tight supply. It is hoped that expansion plans now underway to increase copper capacity will militate against any recurrence of this situation.

■ Development of new sources always brings up political and economic questions. For one thing, will foreign governments welcome and protect outside investment in their natural resources? For another, will nationalism or political upsets lead to trouble? In 1955, for example, some 150,000 tons of copper (about 5 pct of total production) failed to reach the market because of strikes in Rhodesia, Chile and the United States. Again, increased capacity should mean greater stability.

## Copper Mine Capacity

A 5-Year Estimate, in thousands of short tons

	USA		Outside USA		Total	
	Tons	Increase Over 1955	Tons	Increase Over 1955	Tons	Increase Over 1955
1955	1,014†		1,997†		2,982	
1956	1,130*	116	2,183*	186	3,313	302
1957	1,190	176	2,315	318	3,505	494
1958	1,226	212	2,391	394	3,617	606
1959	1,237	223	2,444	447	3,681	670
1960	1,244	230	2,578	581	3,822	811
1961	1,278	264	2,652	655	3,930	919
1962	1,278	264	2,666	669	3,944	933

NOTE: Calculations based on reported capacities to be added by planned new mine facilities. They assume no work stoppages anywhere.

\*C&B RA estimate based on first 10 months ABMS reports.

†Source: Amer. Bu. of Metal Statistics.

### COPPER | Continued

chart on preceding page.)

World population in 1955 was roughly 2¾ billion and it is apparently increasing at a 35-million-a-year rate. By 1965 the total world population may be over three billion. Free World population will probably account for 2¼ billion. This table shows the probable effect of this growth on copper.

	Per capita Consumption
U. S. new copper, 1955	15.5 lb
U. S. all copper, 1955	18 lb
Free World, all copper, 1955	2.9 lb

The world's consumption rate

will tend to approach that of the United States, depending on the rate of mechanization and increase in living standards. United States per capita consumption will also increase steadily in the years ahead.

If the Free World population is taken as 2¼ billion by 1965, and consumption increases to just under 4 lb per capita, Free World demand should then approach four million tons of copper. Thus, even if secondary copper sources (contributing between 10 and 20 pct to total supply) are not considered, expected increases in capacity should amply cover foreseeable needs.

Population growth figures are

of course helpful as an index. But with indicated production capacity scheduled to rise rapidly there is another factor worth looking at: New uses. The well-known properties of copper and its alloys—ranging from plumbing to electric lines—are now being applied in ingenious new ways.

A new and dramatic application is the use of a copper alloy as "curtain wall" material to enclose a metal-clad skyscraper. The architects and owners preferred to use a metal having intrinsic warmth, color and tradition, so they chose architectural bronze. This skin is literally unique in world architecture. It may well become a prototype and open up large tonnage applications of copper alloys in tall structures. In an equally unusual building application, architect Frank Lloyd Wright specified a pre-oxidized copper facade for a 19-story, office-apartment building on the flat Oklahoma prairie.

And there are further uses for copper and copper alloys which, at this point, can only be imagined or intelligently guessed at. Researchers are inquiring into the possibilities of adding new metals like zirconium to produce special property alloys. They are investigating the effects of bombardment of sheet copper by atomic particles to achieve superhardened copper. They are studying the behavior of copper alloys at temperatures down to -180°C. The prospects for expanded Free World capacity, supplemented by copper from secondary sources, should be more than adequate for both new and present applications.

## What About Substitutes?

■ Record prosperity and production rates have caused high demand for copper in recent months. One result is that some traditional users of copper have turned to substitutes. While this has partially freed copper for other users, even the most enthusiastic advocates of substitution have come to feel that no material can ever entirely replace copper.

■ In most cases copper is used in a specific product for one of its inherent properties: electrical conduction, heat transfer, corrosion resistance, ductility, ease of joining—to name a few. Using a substitute invariably entails some sacrifice in product performance, often at a critical point. This severely limits the advantages of substitution.

■ Furthermore, some large copper users have found that substitution for copper may involve broad product redesign or major changes in manufacturing processes. In many cases the final expense has been as high or higher than the cost of using copper. This is particularly true where there is a large investment for new machinery or where personnel must be trained in the techniques of substitutes.

Result: Many potential switchers are now taking a second look.

## GOVERNMENT



TIPS ON SELLING

# America's No. 1 Customer

**The federal government — again in front as the nation's biggest buyer of goods and services—is preparing to spend a hefty \$67 billion plus in the next 12 months, about one-fourth of it for national security.**

**Metalworking firms can expect a significant increase in the dollar volume of business they do with the government. Advances in the technology of modern warfare point to further dependence upon machinery, and a lessened emphasis upon huge masses of manpower.**

Selling to the nation's number one customer presents the same problems as any other marketing program: Competition is tough; the product must be good and bear a competitive price; it must be available when and where the customer wants it, and it needs a continuous, skillful and aggressive sales program to make it click.

Here are some of the things to keep in mind when you're going after government business.

Virtually all government buying either by competitive or negotiated bidding is done from "bidders lists." A manufacturer who wants to produce for the government should first determine all the myriad government agencies which might be interested in purchasing the goods it makes.

### The Government Will Help You Get A Contract

If the number of items a plant could make for the government is few, the Small Business Administration will provide a list of buyers.

If the list of products is fairly large, the firm should check a number of sources.

To help customer and marketer get together, the government provides several aids to business. Here are a few:

\* "Synopsis of Procurement," published daily by the U. S. Commerce Department.

\* "U. S. Government Purchasing Directory," published by the Small Business Administration.

\* "Pointers on Government Contracting," available free from the SBA.

\* "Purchased Items and Purchasing Locations of the Department of Defense" and "How to Sell to the Department of Defense," available from the Government Printing Office.

\* General Services Administration, which buys most of the government's civilian goods, maintains business service centers around the country which keep up-to-date information on what's needed, along with tips on how to sell to GSA.

### How Small Firms Get Contract Assistance

Small companies can get speedy information on federal contract opportunities largely because of cooperation between the Small Business Administration and other government agencies.

## Who's Who At The Office of Defense Mobilization



Executive Office Bldg., 17 St. & Pennsylvania Ave., N.W.

Telephone: Executive 3-3300

	EXT.	ROOM
Arthur S. Fleming, Director	2102	102
Victor E. Cooley, Deputy Director	3461	188
Charles H. Kendall, General Counsel	2123	178
Brig. Gen. Carlton S. Dargusch (USA Ret.), Assistant Director, Manpower	3866	114
Lt. Gen. M. H. Silverthorn (SMC Ret.), Assistant Director, Plans and Readiness	3235	224
*George B. Beitzel, Assistant Director, Transportation	3313	4921
Edward F. Phelps, Assistant Director, Stabilization	2182	174½
Maj. Gen. Jerry V. Matejka (USA Ret.), Assistant to the Director, Telecommunications	3271	187
*George A. Landry, Assistant Director, Transportation	3355	4866B
William Y. Elliott, National Security Council Staff	2482	188
Howard A. Rusk, M.D., Chairman, Health Resources Advisory Committee	2233	109
Joseph D. Keenan, Special Assistant to the Director	3625	181
Harold D. Gresham, Special Assistant to the Director (Foreign Trade)	585	6
Robert R. West, Special Assistant to the Director (Progress Evaluation)	3534	11
David Z. Beckler, Special Assistant (Scientific Liaison)	3563	160
Joseph E. Brown, Staff Director, Health Resources Advisory Committee	2265	111½
Lee W. Schooler, Information Officer	2201	7
William E. Elliott, Security and Inspections Officer	3427	18
Joseph F. Vaughan, Executive Secretary	547	105
James F. Brewer, Administrative Assistant to Director	413	103
*New GAO Building	Sterling	3-5200

SBA, through its "joint determination" program conducted with the military departments and a number of civilian activities, helps procurement officers set aside thousands of planned orders for exclusive handling by small suppliers.

Joint determinations led to the earmarking of about \$498 million worth of business for small firms in the fiscal year ended last June 30. One year earlier, the total was \$387 million.

Actual awards, though at a lower figure than set-asides, added up to \$332.5 million for firms notified of contract opportunities. Rate of order placements rose in the second half of the year, when they amounted to \$180.6 million.

The present fiscal year—fiscal 1957—started briskly as \$150.8 million in new contract opportunities were listed for small concerns

in July, August, and September. By comparison, the dollar value in the same months of 1955 was under \$90 million.

SBA is concentrating on an attempt to get little firms to tackle some of the more complex contract opportunities available. In the last complete fiscal year, SBA informed companies of 86,122 prime contract opportunities and referred 3,508 small firms to prime contractors.

Its advice to small concerns: Be specific when you list the items that you can build competitively.

### Government Loans For Businessmen

Constant use is improving operation of the government machinery for arranging business loans.

Small Business Administration now can offer up to \$250,000 as a business loan to an individual borrower. Federal Reserve System reveals that its V-Loan program is moving at a rising rate. And the Veterans Administration continues to guarantee relatively small loans made by commercial lenders to ex-servicemen.

Loans are granted through the SBA to smaller concerns either directly or in participation with banks, though direct loans amount to little more than 25 pct of the total volume. The average SBA loan comes to about \$50,000, but the agency also has its limited loan participation plan involving a maximum government outlay of \$15,000 per borrower.

Applications received by SBA through its field offices after mid-1956 were showing the effects of the "tight money" policy adopted by the Eisenhower Administration. Last July and August, there were 845 loan requests, compared with 478 in the same months of 1955.

Approvals also were on the upswing during the past year. From January through August, SBA gave the go-ahead on 1,717 applications—half of the 3,423 received—for \$68.8 million. In the comparable months of 1955, SBA got 1,977 applications and granted 693 in the amount of \$31.9 million.

Federal Reserve System V-Loans remain popular among firms handling government work, especially subcontracting assignments. Last Aug. 31, value of these loans outstanding was \$524.6 million, as against \$463.6 million on Dec. 31, 1955.

Small concerns have been important users of the V-Loan facilities, wherein the prospective borrower applies to his own bank, which in turn applies to a Federal Reserve or member bank. Over a six-year period, 73 pct of these loans have gone to businesses with fewer than 500 employees, and 58 pct have been granted to firms with assets of less than \$1 million.

Most of the business loans guaranteed by Veterans Administration involve small sums and are for one to three years' duration. Some are for inventory buildup,



some for working capital, and a substantial number are for vehicles.

### Small Business: More Marketing Assists Coming

If Americans used the Chinese system of naming their years, 1957 will probably go down as "The Year of Small Business." Both parties in Congress, as well as the Administration, are committed to developing programs to remedy all of the problems small business has, is, or may ever encounter.

The politicians may fall a little short of meeting all their promises but it seems apparent there will be lots of action. A Cabinet committee on small business is now working on a firm program to remove some of the problems besetting smaller firms.

Among the most often mentioned areas in which action should be taken this year are:

- \* Tax reduction — Most frequently proposed is a reduction in the basic corporation tax rate from the present 30 pct to 20 pct on the first \$25,000 of profits a year, and personal tax cuts to help unincorporated business firms.

- \* Firms be permitted to use new accelerated depreciation for purchases of used equipment up to \$50,000 in a year.

- \* Corporations with 10 or fewer stockholders be given the option of being taxed as partnerships.

- \* Easing inheritance tax rules so they could be paid over a period of up to 10 years where an estate consists largely of investments in closely-held business concerns.

- \* Stepped up procedures to help small firms participate in government contracting (legislation may be needed). In the last few months, the Eisenhower Administration took renewed steps to make sure the need for progress payments was not a bar to receiving contracts, and the Renegotiation Board eased its profits rules to encourage subcontracting.

- \* Life of the Small Business Administration be extended past 1957.

- \* Exemption from Securities

and Exchange Commission registration be increased from the present \$300,000 per issue to \$500,000.

- \* Paperwork burden on small firms be reduced.

- \* Antitrust laws be tightened and mergers put under closer scrutiny.

Other small business supporters are seeking legislation to relieve small firms from tax-exempt competition; provide a tax break for losses by investors in small business enterprises, and measures to permit the maximum possible small-business expansion from earnings.

### Stockpiles: Slow, Steady Accumulation Now The Pitch

Government's frantic efforts in recent years to build up large hoards of critical and strategic materials is slowing now to a steady, unhurried accumulation of a relatively few items.

The Office of Defense Mobilization, which makes policy decisions on the government's stockpiles, has reduced its shopping list from a high of about 80 items to 26, plus permitting the barter of some agriculture surpluses for some additional materials of foreign origin.

Dollarwise, the government has on hand, in both its minimum and long-range stockpiles, about \$7 billion worth of goods. The total goal is \$11.2 billion. But of the \$4.2 billion still to be acquired, only about \$1 billion is for the minimum stockpile—the real emergency hoard—and the re-

### Agencies taking part in joint set asides of contract opportunities with the Small Business Administration.

Army

Navy

Air Force

Armed Services Petroleum Purchasing Agency

Veterans Administration

General Services Administration

Post Office Department

Department of Agriculture

Department of the Interior

(Commerce Department expected to be added shortly)

mainder is for the long-term stockpile, under which goods are purchased above absolute needs in order to aid depressed mobilization industries and keep domestic sources in at least token production.

The problem of stockpiling now

## Who's Who At The General Services Administration



General Services Administration Bldg., 18th & F Sts., N.W. Telephone: Executive 3-4900

	EXT.	ROOM
Franklin G. Floete, Administrator	4312	6137
Edward K. Mills, Jr., Deputy Administrator	4312	6137
C. D. Bean, Commissioner of Federal Supply Service	5268	5141
F. Moran McConihe, Commissioner of Buildings Service	4193	6342
*Elmer H. Weaver, Commissioner, Defense Materials Service	2243	7002

\*7th & D Sts. Republic 7-7500

is more one of filling the most difficult remaining goals, rather than in buying huge quantities. As defense requirements change because of shifting concepts of war, some new goals may be opened and some goals once closed may be reopened as demands for new and larger quantities of heat resistant alloys and similar materials increase. In other instances, 1957 will see goals closed as the larders become full or new requirements reduce the need for stockpiling.

ODM for about a year has been attempting to get underway a good-sized program of developing substitutes for some materials, such as selenium, of which purchases for the stockpile have been almost impossible. In some cases, such as nylon becoming a substitute for hog bristles in paint brushes, substitute materials naturally replace the need for a stockpiled item. But in other cases, long research will be needed to develop substitutes.

#### Subcontracting Better For Small Firms

If you're in the market for government business and your company is considered a "smaller firm" in your industry, a subcontract may well be preferable to a prime contract.

Larger firms maintain full-time Washington staffs just to keep them informed on trends in government buying. Small firms can't afford this luxury.

The chances of "making a killing" on a government prime contract are very slim. If the government decides you are making too much money, they'll make you pay it back through renegotiation of your contracts. If you've figured your costs on the low side and have failed to allow for the higher prices of raw materials, you could lose your shirt.

In subcontracting, you let the prime contractor take the biggest risk. Your eventual net gain on the deal may be somewhat less, but the risks involved also are considerably less.

## Overseas Governments Buy Here Too

■ Foreign governments, receiving U. S. aid under the Mutual Security Program, also buy a lot of goods and services in this country. The alert manufacturer should watch foreign procurement bids as another source of government contracting.

■ The International Cooperation Administration, which administers the foreign aid program, has established a small business office of its own. Last fiscal year, some 6,000 advance notices on proposed ICA-financed foreign procurement were sent to U. S. firms. The number will increase this year,

because new rules by the agency require the ICA to receive advance notices of all U. S.-financed foreign purchasing agencies, or through regular commercial importer-exporter channels.

■ Another new regulation, also designed to give U. S. business a bigger share in foreign procurement with American funds, requires that all specifications now be based on U. S. standards. Details of the foreign procurement program are available from the ICA's small business office, Room 417, 1800 H St., N. W., Washington, D. C.

## What U. S. Is Buying For Stockpile

### Purchased Directly for Strategic Stockpile

Antimony  
Asbestos, amosite  
Bauxite, Jamaica  
Beryl  
Chromite, metallurgical  
Cobalt  
Copper  
Diamonds, bort  
Fluorspar, metallurgical  
Iodine  
Lead  
Magnesium  
Manganese, battery type, synthetic dioxide  
Manganese, chemical, types A and B  
Manganese, metallurgical  
Mica, Muscovite block and film  
Mica, phlogopite splittings  
Molybdenum  
Nickel  
Opium  
Selenium  
Shellac  
Silicon carbide  
Talc, steatite block  
Tin  
Zinc

### Bartered for Surplus Agricultural Commodities

Abrasives, crude aluminum oxide  
Antimony  
Asbestos, amosite and chrysotile  
Bauxite, jamaica, surinam, refractory  
Beryl ore  
Bismuth  
Cadmium  
Chromite, metallurgical, refractory  
Cobalt  
Diamonds, industrial  
Graphite, Ceylon  
Iodine  
Lead  
Magnesium  
Manganese, battery type, synthetic dioxide  
Manganese, chemical types A and B  
Manganese, Metallurgical, including ferro-manganese and electrolytic  
Mica, Muscovite block, film and splittings  
Mica, phlogopite splittings  
Quartz crystals  
Shellac  
Silicon carbide, crude  
Talc, steatite block  
Titanium  
Zinc

# Finding New Markets: How The Government Can Help

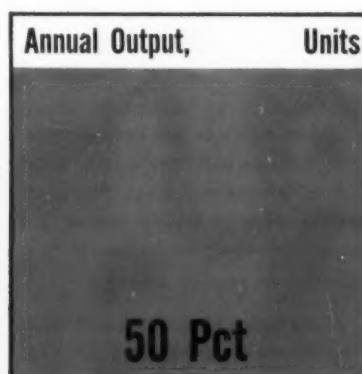
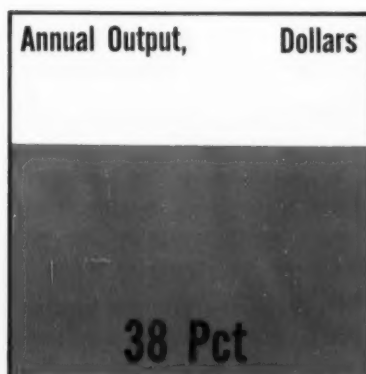
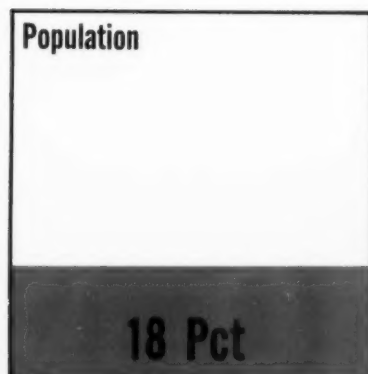
## Why We Need More Market Research

In the first full decade following World War II (1946 through 1955), our population grew by almost 25 million persons. But both production and productive capacity expanded at a much more rapid rate. In this ten-year period population gained less than 18 pct, the annual output of all goods and services, measured in constant dollars, went up 38 pct and units of industrial output increased over 50 percent. The big question: How to get this output to market effectively?

In this same period total investments by business firms in new plant and equipment aggregated more than \$233 billion with the annual rate almost doubling. The Federal Government alone spent almost \$15 billion in scientific research.

Along with this growth has come greater competition in both old markets and new. Today, there is greater recognition than ever before of the importance of distribution in moving this expanding output. Our ability to continue the present rate of growth and expansion will depend on increased efficiency, improved methods and greater emphasis in all phases of distribution.

## What's Happened Since 1946 (Increases 1946-55)



◆ AS WE enter 1957 many American business firms are taking another look at their distribution methods, their marketing organization, and their budgets for marketing research.

The more alert sales executives have learned that market facts, not guesses, form the basis for sales strategy which pays off in greater returns per dollar of selling expense. Many are also finding that their Government, and especially the U. S. Dept. of Commerce, can be of assistance in providing infor-

mation on market facts and characteristics.

Tools of marketing, like the tools of production, are useful only to the extent they are put to work. The Dept. of Commerce can help you in *finding* effective market tools, and *adapting* them to your own operations.

Businessmen who need this type of assistance should be familiar with the activities of five Bureaus or Offices in the Dept. of Commerce which are concerned with economic information and its use. These are:

- (1) Bureau of the Census; (2) Bureau of Foreign Commerce; (3) Office of Business Economics; (4) Office of Area Development; and (5) Business and Defense Services Administration, including its Industry Divisions, Office of Technical Services and Office of Distribu-

Author: H. W. Ketchum, Director, Office of Distribution, Dept. of Commerce, Washington, D. C.

tion. Each of these agencies can assist you in your marketing research activities.

The *Bureau of the Census* is called the fact finder for the nation. Its basic censuses and current reports contain a wealth of information on market location, size and characteristics including data on population; housing; income; manufactures; wholesale, retail and service trades; agriculture; mineral industries and governments.

Publications of the Census Bureau are too numerous to list even on a selected basis. But an inquiry to the Bureau of the Census, or to any of the Department's 32 Field Offices will provide information on specific types of data available. In addition, information not included in the published materials can usually be obtained through special tabulations on a reimbursable basis.

The *Bureau of Foreign Commerce* is the businessman's agency in the field of foreign trade and

services the business community in expansion of world trade, travel and investment. Its many practical kinds of assistance for those who buy or sell abroad are described in a current brochure, "The Bureau of Foreign Commerce and You."

The *Office of Business Economics* keeps the national economic accounts. These provide continuous estimates of total output, national income, personal consumption expenditures and savings and similar measures which are effective indicators of national economic trends and growth factors.

#### Survey economic trends

Its monthly *Survey of Current Business* features basic analysis of significant economic developments and trends and contains some 2500 economic indicators which can be used by businessmen in forward planning and economic forecasting.

The *Office of Area Development* serves as the Department's contact point with official state development agencies and assists them in carrying out state, regional, and

community economic development programs. The Office also serves as the Federal Government's point of coordination for rendering assistance to labor surplus areas in developing new sources of employment.

The Commerce Dept.'s basic responsibility to promote and foster domestic commerce is lodged primarily in the *Business and Defense Services Administration*. It is also the operating agency for national defense and mobilization readiness planning. Services to business are provided by BDSA's 25 Industry Divisions, Office of Technical Services, and the Office of Distribution.

BDSA's 25 Industry Divisions represent every major manufacturing industry in the United States in its relation with Government. Here industry representatives may discuss their problems, express their views on matters of public concern and obtain first-hand information on Government actions affecting industry.

The services to business provided

## How Can the Office of Distribution Help You

If you have a marketing problem, or are searching for market information, the Office of Distribution can help. Here are some of the requests it has handled in recent months:

A manufacturer of small cutting tools and machinery requested information on methods for establishing the market potential for his products.

A small aluminum castings manufacturer faced with the problem of seasonal demand sought information on new markets to balance production.

A small steel manufacturer asked for information to assist him in the establishment of salesmen's quotas, method of compensation, sales territory alignment, and the location of

various branch warehouses.

A manufacturer of small delivery trucks was seeking information which would enable him to locate new types of users.

The representative of a large chemical company needed data which would enable him to project ten-year growth indexes for aluminum, magnesium and titanium by geographical regions.

An association executive sought information for use by his member firms in tracing the use of steel and aluminum castings and their distribution.

The branch manager of a steel products company which had developed a new product, wanted information to assist him in finding out whether the firm should establish exclusive

agents for the new product.

The representative of a newly established machine company asked for information concerning the selection and designation of a sales agent.

The sales manager of a producer of pneumatic tools requested assistance in determining whether to distribute through wholesale outlets or to establish its own outlets.

In each of these cases and many others of a similar nature information was provided and suggestions offered. Obviously, in no case did staff members try to tell their business visitors "how to run the business." But the information was helpful in enabling these firms to do a better marketing job.



by the Industry Divisions include the collection and analysis of industry and trade information and statistics much of which is useful in marketing. The following periodical reports are regularly issued by the Industry Divisions: Construction Review; Chemical and Rubber Industry Report; Containers and Packaging Industry Report; Copper Industry Report; International Iron and Steel Industry Report; Pulp Paper and Board Industry Report.

### **Reports yield clues**

Staff members from the Industry Divisions are also available for consultation with businessmen on such problems as new processing developments, uses of materials, product characteristics, industry trends, world production and supply. Eleven of the 25 Industry Divisions are of primary interest to the metalworking industry.

The *Office of Technical Services* collects technical reports growing out of the \$2½ billion worth of research conducted each year for the

Government and reproduces and distributes them to American science and industry.

Most of these reports come from the Army, Navy, Air Force and Atomic Energy Commission. They range through all fields of industry including metals, plastics, chemicals, electronics, petroleum, leather, ceramics, metallurgy, nuclear physics and engineering, aeronautics, textiles, foods, instruments, geology and mineralogy.

Many manufacturing firms have found in these reports ideas for new products or processes and technological improvements. OTS has in its collection over 250,000 such reports.

To keep the public advised of material available for the first time, OTS publishes monthly U. S. Government Research Reports each issue of which lists several hundred new reports. In addition, the office publishes the monthly Technical Reports Newsletter which abstracts reports of particular interest to the small and medium size plants.

On specific technical subjects,

such as transistors, electroplating, adhesives, and rubber, over 300 bibliographies of reports in the OTS collection have been compiled. A list of these catalogs is available on request.

Other activities of the Office of Technical Services include assistance to industry (through its Commodity Standards Div.) in simplifying commercial practices and adopting uniform commercial standards; and (through the Trade Associations Div.) dissemination of information on non-profit organizations of businessmen, particularly through the publication of directories. A new directory of over 2000 national trade associations has just been published.

### **Spread market info**

OTS also has in its organization the full-time staff of the National Inventors Council, which publishes lists of technical problems affecting national defense as submitted to it by the military agencies. The Council aids civilian inventors, professional and amateur, in presenting their ideas to representatives of the Department of Defense.

Rounding out the BDSA organization is its Office of Distribution. This is the office most directly concerned with marketing problems. Its entire program is directed toward the spreading of market information and assisting those engaged in any phase of distribution.

Activities of the Office of Distribution include basic research, publications, consultations with individual businessmen, participation in trade association activities and related matters. Areas covered include market research and development, market measurement, sales promotion and advertising, wholesale operations, retail operations, service trades and distribution costs.

Most basic to its program for disseminating marketing information is the monthly publication *Distribution Data Guide*. This lists and annotates the most significant marketing information currently made available by both Government and private sources.

This service, which was initiated at the request of business groups, has been enthusiastically received. In a relatively short

## **Gov't. Fact Finding— A Valuable National Asset**

**During the current fiscal year the Federal Government will spend about \$35 million in major statistical programs.**

Many of these statistical programs provide market information — relating to production, employment, income, consumption, investments and similar economic factors and trends essential to market measurement. Much of it will be detailed by industries, trades, commodity lines or products, with various geographical break-downs.

**The cost of collecting, tabulating, processing, analyzing and publishing the vast array of factual data resulting from all of these statistical programs is prohibitive for any individual business firm or industry.**

**Fortunately, however, most of it is made available to all who are interested. But regrettably, relatively few firms make use of this valuable national asset to their best advantage.**

# Who To Call At BDSA

Here are the top officials in the Business and Defense Services Administration in charge of Offices or Divisions of primary interest to the metalworking industry.

14th & Constitution Ave., Washington, D. C.

TELEPHONE: STerling 3-9200

	ROOM	EXT.			
Administrator: H. B. McCoy	4848	4913	Actg. Dep. Dir.: J. L. Oliver	4310	3518
Acting Deputy Administrator:			Communications Div.		
W. C. Truppner	4870	4866	Deputy Dir.: Alexander J. Falk	4019	4821
Asst. Administrator: Fred W. Mears	4852	4901	Electrical Equip. Div.		
Asst. Administrator:			Deputy Dir.: Charles E. Grim	4118	2175
Russell G. Bellezza	4852	4901	Electronics Div.		
Office of Distribution			Deputy Dir.: D. S. Parris	4115	4036
Dir.: H. W. Ketchum	4001-A	4481	Gen. Components Div.		
Mrkt. Res. & Dev.: N. A. Miller	4014	4486	Deputy Dir.: Dudley A. Hendricks	4128	3156
Mrkt. Operations: I. Q. Lord	4002	4192	Gen. Industrial Equip. Div.		
Office of Technical Services			Deputy Dir.: H. S. Mills	4007	4327
Dir.: J. C. Green	5100	2143	Metalworking Equipment Div.		
Agri., Constr. & Mining Equip. Div.			Deputy Dir.: N. A. Olsen	4015	3525
Deputy Dir.: J. F. Skillman	4111	4317	Power Equipment Div.		
Automotive Div.			Deputy Dir.: Ellsworth J. Hand	4110	4241
Deputy Dir.: G. R. Davis	4106	3294	Shipbldg., R.R., Ord. & Aircraft Div.		
Bus. Machines & Office Equip. Div.			Actg. Deputy Dir.: F. H. Winget	4025	4816

## MARKETING

*Continued*

period it has become widely used. Cumulative subject matter indexes issued biannually convert back issues of the "Guide" to a basic reference for all types of market data.

A public lending reference library writing recently to the Office of Distribution about the "Guide" said it had acquired 22 items listed in a single issue.

Together the Office of Distribution and the Industry Divisions have prepared and published over 200 such bulletins. A list of these bulletins is available on request.

To support its research programs the Office of Distribution maintains a comprehensive library in which are placed all materials reviewed and annotated in the Distribution

Data Guide. The master index contains more than 10,000 listings of market information published in the past two and one-half years. The library is available for use by other agencies of government, individual business representatives and the general public.

A second media for disseminating information on marketing research and operations is a new series of Business Service Bulletins covering many distribution subjects, selected trades or commodities, business practices or functions. Many of these are lists of basic information sources bringing together citations of both gov-

ernment and non-government publications, directories, trade magazines, trade associations and other sources.

The Office of Distribution is also collecting case materials showing practical applications of government statistics in all types of market research. The first publication of this project "Tools For Market Analysis—County Business Patterns"—describes and illustrates the uses of this useful marketing tool in locating and measuring markets. It also helps establish sales potentials by types of consuming units and by geographical locations.

## WANT EXTRA COPIES?

A limited number of extra copies of this 32-page feature are now available upon request to Readers' Service Dept., The Iron Age, Chestnut & 56th Sts., Philadelphia 39, Pa.

# how to rustproof steel in warehousing

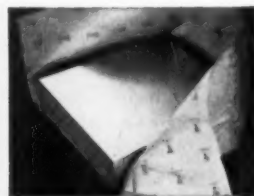
When unusual times and conditions make it necessary for you to warehouse any kind of steel, even such sensitive steels as black plate and cold rolled, here's how you can combat the rust problem. Wrap your steel in Ferro-Pak, Cromwell's volatile corrosion inhibitor paper. Non-toxic chemical vapors from Ferro-Pak coat the steel with an invisible film that makes it impossible for rust to get the slightest foothold.

Even under adverse conditions, such as outside storing or shipping, Ferro-Pak provides complete protection. It is waterproof, strong, yet highly flexible and easy to handle. The chemical rust inhibitor is compatible with oil and stays effective for long periods even when the humidity soars.

Whether you're a shipper or a buyer of steel, it will pay you to specify Ferro-Pak wrapping wherever rust is a problem. For an interesting idea brochure on many uses for Ferro-Pak, write Cromwell Paper Company, 4803 South Whipple Street, Chicago 32, Illinois.



How to rustproof a freight car—Ferro-Pak is used to line sides of car and to interleave coils, transforming ordinary freight car into huge rustproof package.

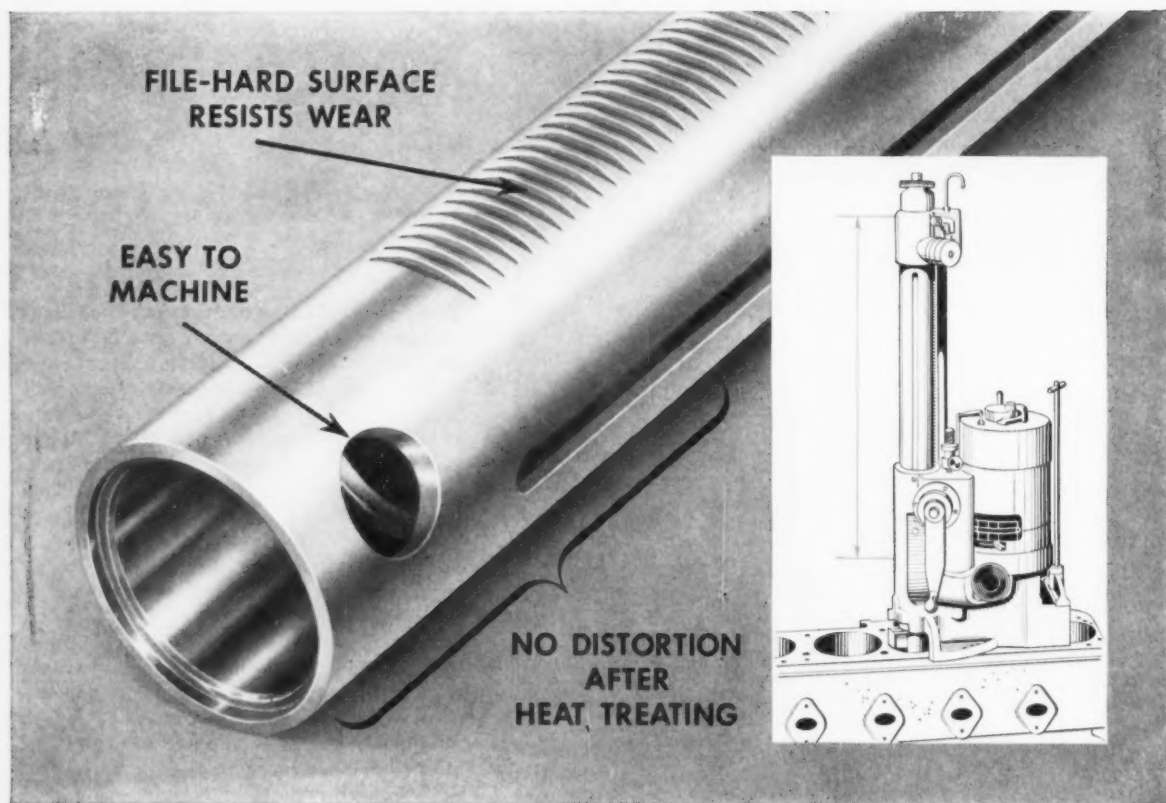


How to rustproof black plate—On this light gauge, dry, uncoated steel, rust can start from a fingerprint. Ferro-Pak keeps black plate rust-free even when the humidity soars!

## FERRO-PAK<sup>®</sup>

by Cromwell

For over 38 years—  
"Paper Engineers" for Steel



## Boring bar maker solves heat-treat distortion problem by switching to TIMKEN® 52100 steel

**H** EAT-TREATING distortion was running up the manufacturing costs of the boring bars Van Norman Automotive Equipment Company makes for reboring hard-sleeve cylinder blocks. The column of the boring bar, which acts as the spindle, had to be extremely straight. Yet many of them were distorting after heat treatment. And that meant putting them through an extra straightening process.

Studying the problem, metallurgists of the Timken Company suggested a switch to Timken® 52100 steel. Since this steel is hard and tough, it had the qualities Van Norman wanted. And because it responds uniformly to heat treatment it proved to be the answer to their production problem.

By switching to Timken 52100 steel, Van Norman eliminated the need for the costly straightening operation. And as a bonus, they've found that Timken 52100 steel is easier to machine than the steel they previously used.

The Timken Company pioneered the development of 52100 and is one of the principal producers of the steel—the only source of the grade in three finished forms: bars, tubing and wire. You can rely on the Timken Company for small run or emergency requirements as well as mill quantities.

We stock 101 sizes of 52100 steel tubing, ranging from 1" to 10½" O.D. For a complete stock list of available sizes, grades and finishes, write The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO".

# TIMKEN *Fine Alloy* STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING



# REPORT TO MANAGEMENT

## The Iron Age Batting Average

Many of the pages of this 102nd annual IRON AGE issue, "Metalworking's Growing Markets," are filled with predictions of what's ahead for business in general and, specifically, for the many elements of industry that make up metalworking.

### This isn't anything new.

If you are a veteran reader, you will remember that this tradition is followed each year, but with a varying format as circumstances change.

But it's doubtful if you will take the time to look back and see how accurate predictions were for 1956. If you do, you will find that a year ago, THE IRON AGE called most of the business shots pretty close—close enough to qualify as a reliable guide for almost any metalworking operation.

There were some missed ones too ("Look for another strong year in farm equipment"), but these were far outweighed by a general accurate outlook for the 12 months of 1956.

### 1956 Predictions in Review

A year ago, IRON AGE editors went out on the limb and predicted: "You will find few weak spots in the 1956 business outlook. And where these occur, new markets and demands stand ready to fill any economic gaps, assuring a year of business activity just about equal to the hectic, but profitable, 1955."

At that time, this look ahead was considered far too bullish by many experts. This may be responsible for the slight underestimation of 1956's best ever record.

In the tricky automotive industry, it was reported that "You can bet that Detroit's top forecasters have their tongues in cheek when they say that 1956 production will be as big or almost as big as 1955."

It was noted that a 15 pct drop in auto production was more than likely; that

facelifted 1956 models would be "more difficult to sell." But on the basis of fat tooling orders for 1957, it was predicted that early introduction of new models would bolster sales in the waning months of the year.

### In appliances,

the tough competitive year ahead was predicted, but "if appliance builders say they can outperform the boom levels of 1955, there's a good chance they will do it." They did, in spite of what the "experts" predicted.

### Aircraft's good year

was not too tough to predict. Big backlogs for defense and new interest by the commercial airlines in jets and other new developments put this \$8 billion year in the bag.

A peacetime record year for machine tools was also predicted, and materialized on the demands of industry to increase productivity.

It was correctly forecast that "some major program for the interstate highway system is bound to be adopted." This is now in the works and expenditures for highways are booming the outlays for construction, more than taking up the slack from depressed new home building.

### On the Economic Side

The extremely tight credit picture that characterizes today's economic situation could scarcely be forecast in its entirety.

But it was nevertheless predicted: "tightening credit and tougher financing are linked with the few possible weak points in the picture—possibility of faltering auto sales and new home buying.

"But even if these two major markets slip moderately, there is a new force moving into the picture . . . increased capital goods outlays." These are only a few of the high points. But it's there for the record.

## INDUSTRIAL BRIEFS

**Branching Out . . .** Air Reduction Sales Co., division of Air Reduction Co., Inc. has acquired the assets and business of Jackson Products, Inc. of Detroit. The Jackson company manufactures welding electrode holders, welding helmets, safety goggles, and other welding supplies for the electric arcwelding field.

**International Agreement . . .** Norton Co. has been authorized by the Atomic Energy Commission to exchange information and services under the U. S. bi-lateral agreement with Canada for co-operation concerning civil uses of atomic energy. Under the bi-lateral agreement Norton is authorized to perform services for the Government of Canada (including the communication of secret and confidential restricted data) and to receive and possess such services from the Canadian Government.

**Continuous Action . .** Beckman Instruments, Inc., Fullerton, Calif., has acquired Watts Manufacturing Co., Inc., Roncerverte, W. Va. Latter is a manufacturer of a new continuous-action gas chromatograph, an analytical instrument destined for an increasingly important role in modern industrial process control. Transaction involves all the physical assets of the Watts Co.

**Expanding Pipelines . . .** According to the Bureau of Mines report, the nation's petroleum pipeline system is now long enough to circle the earth seven and a half times. It is big enough to hold more than 3 billion gallons of oil. The U. S. has more than 188,000 miles of lines in 45 states and the District of Columbia. The report reveals a continuing trend toward using larger sizes of pipe for new construction.

**Beating The Drums . . .** The Steam Turbine Div., Westinghouse Electric Corp., Lester, Pa. has what it calls a new "electronic assistant," to be used by engineers engaged in turbine design. The engineering aid is an IBM 650 Magnetic Drum Data Processing Machine. The computer is manufactured by International Business Machines Corp., Endicott, N. Y.

**Byers Market . . .** L. B. Foster Co., Atlanta, Ga., is now a distributor for Byers wrought iron pipe. The Foster company is marketing the wrought iron material under the supervision of the A. M. Byers Company division office in Atlanta.

**B.S. in Mechanics . . .** Lehigh University has adopted an engineering mechanics curricula starting in September 1957 leading to a degree of bachelor of science. Advanced Mechanics of Materials will be an introduction to two-dimensional theory of elasticity, theories of failure, bending and torsion of prismatic bars, principles of indeterminate analysis, and instability.

**Top Of The Market . . .** Stampings for Ford Division's retractable hardtop convertible, will be produced in the Cleveland Stamping Plant. Production will include: complete rear quarter panel assembly, floor pan, windshield header panel, rear wheelhouse assembly and luggage compartment lid assembly.

**Docking Alcoa . . .** An all-purpose dock will be constructed by Dravo Corp. for the Aluminum Co. of America's new Warrick smelter on the Ohio River. It will be used initially for the handling of building materials and machinery flowing into the new plant site.

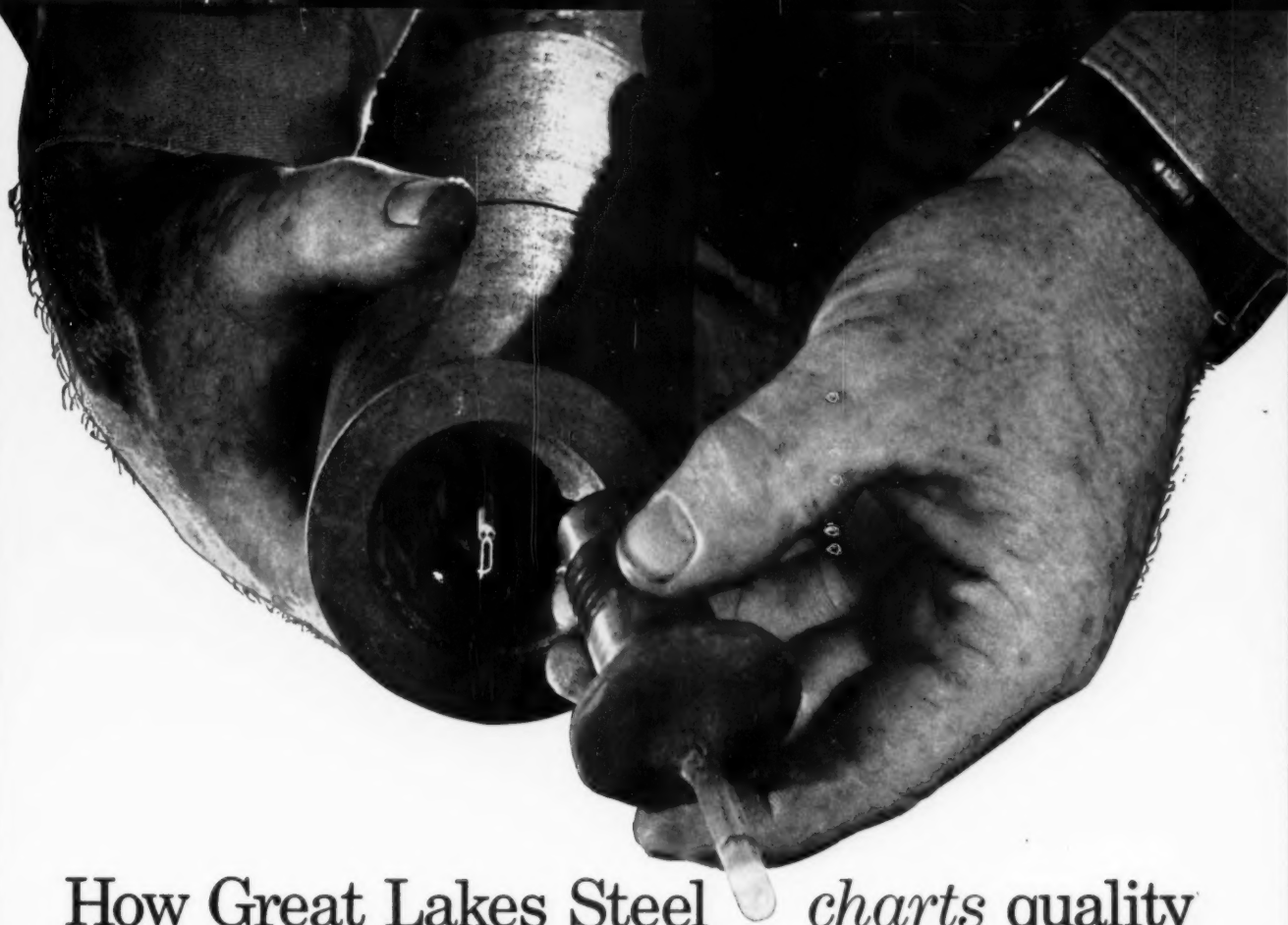
**Nine On A Side . . .** A research and development division has been formed by the American Management Assn. It will carry out a program of meetings and publication activities intended to help research and engineering executives improve their understanding of management principles. This unit marks the ninth operating division of the national management educational association.

**Topped By A Boilermaker . . .** Harold T. Amrine, Head of the Department of Industrial Engineering at Purdue University, was elected 1957 chairman of the College-Industry Committee on Material Handling Education. Activities include: development of visual aids, material handling course outlines and research project coordination.

**Millions for Defense . . .** Chance-Vought Aircraft, Inc., Dallas, Tex., has received Navy orders totaling \$26 million for additional production of Regulus I, the operational attack missile, and of Regulus II, an advanced supersonic missile. This order, coupled with orders for Chance-Vought's F8U-1 Crusader fighter, brings the company's backlog of Navy orders to more than \$500 million.

**Chemicals You All? . . .** Kaiser Chemicals Division of Kaiser Aluminum and Chemical Sales, Inc., have established a new sales office in Birmingham, Ala. It will be managed by Samuel T. Johnson.

**Going Underground . . .** Negotiations have been completed to assign the lease on the Godfrey underground mine, to the Snyder Mining Co. by U. S. Steel's, Oliver Iron Mining Co. Snyder plans to operate the Godfrey in conjunction with their own adjacent South Tener Mine, using the hoists and surface facilities of the Godfrey for both properties.



## How Great Lakes Steel *charts* quality



Left: Thermocouple is inserted into an open-hearth furnace to check temperature of heat. Right: Multiple indicator records open-hearth temperature.

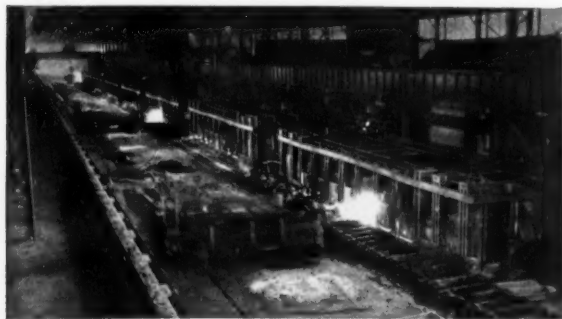


This is the business end of a thermocouple, the rugged yet delicately accurate device that measures temperature in an open-hearth furnace. The two fine wires you see above, inside the casing, absorb heat and transmit it as an electrical current to be charted by recording potentiometers.

No chance for guesswork here—through eleven long hours the rising temperature of what will be 500 tons of Great Lakes open-hearth steel is meticulously controlled. Then, at exactly the right time and the right temperature, the glowing molten metal gushes into ladles for pouring into ingots.

The slender, spidery lines on the chart assure another heat of high and uniform quality steel. Quality that is checked and rechecked at every step to assure that customer specifications are met precisely.

Why don't we get together and talk over your steel needs? Some time soon?



This view shows 12 of Great Lakes 17 open-hearth furnaces. Bright spots are furnaces being charged with pig iron and scrap. The open-hearth process takes from 10 to 12 hours.

### GREAT LAKES STEEL CORPORATION

Detroit 29, Michigan • A Unit of



*District Sales Offices:* Boston, Chicago, Cincinnati, Cleveland, Grand Rapids, Houston, Indianapolis, Lansing, Los Angeles, New York City, Philadelphia, Pittsburgh, Rochester, St. Louis, San Francisco, Toledo, Toronto.



AUTOMOTIVE ASSEMBLY LINE

## REVIEW-FORECAST

## It Won't Be Dull in Detroit in 1957

**Big question is will sales come back to higher levels . . . New philosophy in model changes means an end to faceliftings . . . Industry will continue expansion, but at a slower rate—By T. L. Carry.**

♦ **WHAT'S IN STORE** for the auto industry in 1957? To learn the answer to that question, it is necessary first to look back at 1956 and try to pinpoint significant events which will have a bearing on this year's business.

It doesn't take a genius to point out that 1956 left a great many things to be desired as far as the automakers are concerned.

Sales, compared to 1955, were off considerably; cutbacks in production were the rule rather than the exception. Economic conditions in Detroit were bad when compared to other parts of the country and other industries.

None of these facts can be denied. There are many reasons why.

**How Come?** . . . In the first place, the industry was over-

whelmed by its performance in 1955 and truly thought that the 8 million-car year was here to stay. It's an easy matter to point out now that such a thing was not so, but at the time it looked that way.

As a result, the industry built up huge stocks of new automobiles which the public refused to buy because the 1956 cars looked almost exactly like the 1955 cars.

When the cars didn't sell, cutbacks were mandatory and also quite drastic. But the industry has learned one lesson from its experience last year.

**The Last Time** . . . It's the last time that any big producer will ever do a minor facelift job on a new model car.

The 1958 model year is already earmarked for facelifting by most

auto companies. But they aren't going to get caught short again. Tooling for the 1958 cars is going to be almost as big as it was for 1957.

Some has already been released and the rest will be ordered as the year progresses.

In addition to the facelifts, there are at least three cars that are scheduled for major changes. These are the Lincoln, Pontiac and Chevrolet.

It's an open secret that Lincoln will shift to the unit body. It is also possible that Pontiac will have its own body shell in 1958. Previously the division shared GM's "A" body with Chevrolet but Pontiac's sales performance may have dictated the need for a separate shell.

**Not So Bad** . . . As pointed out above, 1956 generally was a slow year. But it wasn't as bad as some people say, although not as good as some people predicted.

Let's look at some more facts. The Automobile Manufacturers Assn. estimates that there were 5,850,000 factory sales of new cars last year. This compares to 7,920,186 in 1955 and 6,665,863 in 1950, the two previous record years. By these standards, last year was the third biggest in the industry which isn't bad at all.

At the same time, even though it was not the biggest production year, 1956 set a record in the industry for capital expenditures. A record \$2 billion was poured into new plants and equipment. This amount is exclusive of the similar record of \$1 billion which was spent to tool up for the 1957

### How The Year's End Looks To Detroit

1956 IN REVIEW	FORECAST FOR 1957
<b>A relatively disappointing year. 5,850,000 cars, 1,200,000 trucks.</b>	<b>A comeback year.</b>
<b>Major styling changes for 1957 give industry a new look.</b>	<b>7 million cars, 1 million trucks.</b>
<b>A record \$2 billion was spent on capital expenditures.</b>	<b>No more minor changes. Faceliftings will amount to major restyling.</b>
<b>First SUB payments were made in auto industry. But trust funds were largely unaffected.</b>	<b>Expansion will continue, but at a more moderate rate.</b>
	<b>Quiet year for labor. Emphasis on groundwork for 1958, including move to shorter work week.</b>





## "Bolt" problems . . . two kinds

**A**LIGHTNING BOLT flashes from angry skies. What happens to electrical service? Nothing. This is one kind of "bolt" problem the electrical industry has learned to cope with.

But how about the mechanical kind of bolt used to connect electrical lines and equipment? They have to be strong and flawless, these fasteners . . . and completely reliable . . . to maintain service under all conditions.

There's a good answer now to that too: *Silicon bronze* fasteners . . . *strongest* of all highly conductive fasteners. RB&W was first to work this material successfully into standard fasteners.

### RB&W—A MAJOR SUPPLIER TO INDUSTRY

A leader in its field for over 111 years, RB&W turns out the finest quality standard fasteners for the electrical as for virtually all major manufacturing industries. *Modern facilities, new techniques, long experience . . .* all combine to make RB&W fasteners truly the "strong point of any assembly."

### CALL IN THE RB&W "FASTENER MAN"

Impressive savings can be realized on fastener costs by proper application. It might pay you well to have the RB&W "Fastener Man" take a good look at your requirements.



**RUSSELL, BURDSALL & WARD  
BOLT AND NUT COMPANY**

**Plants at:** Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver. **Distributors from coast to coast.**

**RB&W FASTENERS - *Strong Point of any assembly***

## ETASCO<sup>®</sup> SERVICE and you...

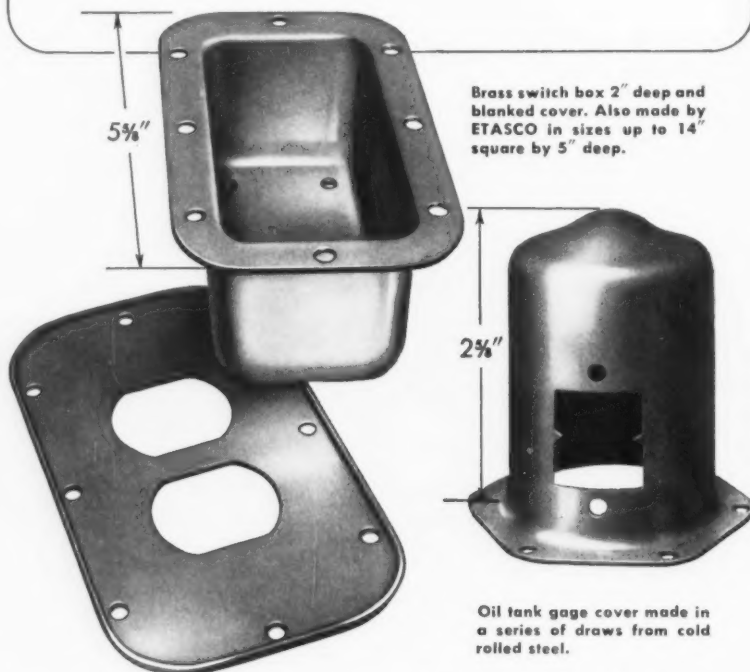
What our *customers* say about us is more important than what we tell you about ETASCO service.

One of our customers says:  
"Thank you and your company for speedy action in getting an ample supply of our Part HG 79215 to us. Your understanding far surpasses the hysterical policies which are general in today's business."

### Stampings by **ETASCO<sup>®</sup>** can make your blueprints more profitable to YOU

From a million small stampings to drawn parts up to 8½" deep, ETASCO has the equipment to do your job at lowest possible cost.

Batteries of eyelet machines, presses up to 400 tons capacity, automatic tappers and spot welding machines *simplify production problems* to give you good work at low cost.



**Your blueprint  
for profit...**

... is a call to ETASCO. Let us look at your prints and give you a quote, at no obligation to you, of course.

**ETASCO<sup>®</sup>**

**EASTERN TOOL & STAMPING CO., INC.**

90 Ballard Street, Saugus, Massachusetts  
Saugus 8-0992

— where America's first successful  
ironworks is located



## Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
DEC. 29, 1956	163,052	23,720
DEC. 22, 1956	164,098	24,341
DEC. 31, 1955	108,356	13,762
DEC. 24, 1955	156,981	20,271
TO DATE 1956	6,234,911	1,217,809
TO DATE 1955	8,320,648	1,320,754

\*Estimated. Source: Ward's Reports

models. Total capital investment since the end of World War II now stands at an astounding \$7 billion.

Indications at this point are that capital outlays this year will not be as big. Expansion will definitely continue, but not at such a rapid rate as before.

**SUB Effects . . .** Unemployment, which seemed to grow and grow in the industry as the year progressed, was made a little easier to bear because of supplemental unemployment benefits.

It was the first time that SUB payments were made and figures released by the United Auto Workers show that they were not as big as might have been expected.

Big Three expenditures for SUB were a little over \$3.8 million. Contributions of smaller companies brought total payments to over \$4 million. The position of each of the Big Three's trust funds, an important factor in figuring payments, was not materially affected.

This condition is an indication of things to come. The UAW claims that the present condition of the various trust funds demonstrates the basic soundness of the SUB plan.

The union has already served notice that it will ask substantial increases in SUB payments when current contracts are up for negotiation next year.

**Labor's New Goals . . .** This is not unexpected but the union claims that SUB payments could easily be increased even on the basis of current contribution, which are 5 cents for every hour an employee works.

That is not all that the UAW will be asking in future contract

negotiations. Look for a lengthy barrage on a shorter work week. This is liable to start next spring after the UAW convention in Atlantic City.

It is at this parley that the groundwork and strategy will be laid for new contracts. You can expect the propaganda to start sometime in 1957 and increase in intensity as the time for contract renewal draws near.

Automation will be the whipping boy in the campaign. Best guess right now is that the union will obtain some form of a shorter week. Biggest reason for the guess is the fact that all of the Big Three contracts will be terminating at the same time and Walter Reuther, UAW president, will play one company against the other until he gets what he wants.

Mr. Reuther practically committed himself to a demand for a shorter week 2 years ago when he made a deal with Carl Stelatto, president of the huge Ford local, in order to obtain a form of his highly touted guaranteed annual wage, i.e., SUB.

The Ford local president, who has fought top UAW leadership on many occasions, had plugged for a short week instead of SUB. He

## AUTOMOTIVE NEWS

went along with SUB in 1955 in exchange for future promises to concentrate on the short week.

**Competitive Angle . . .** Look for labor to start working hard on its advance plans early this year in preparation for the big push in 1958.

The squeeze on the independents in the business is going to tighten even more this year. Even more significant will be Chrysler's fight for a place in the market.

Chrysler has been hurting now for at least 3 years.

Its cars have not enjoyed the public acceptance which was so evident in the past. The company lost \$12 million in the third quarter of 1956.

How long can this go on? More than one reporter has mentioned that 1957 is the make or break year for the corporation. Either it sells cars this year or it is only a matter of time.

It is going to become increasingly harder for the independents to survive in today's market.

## THE BULL OF THE WOODS

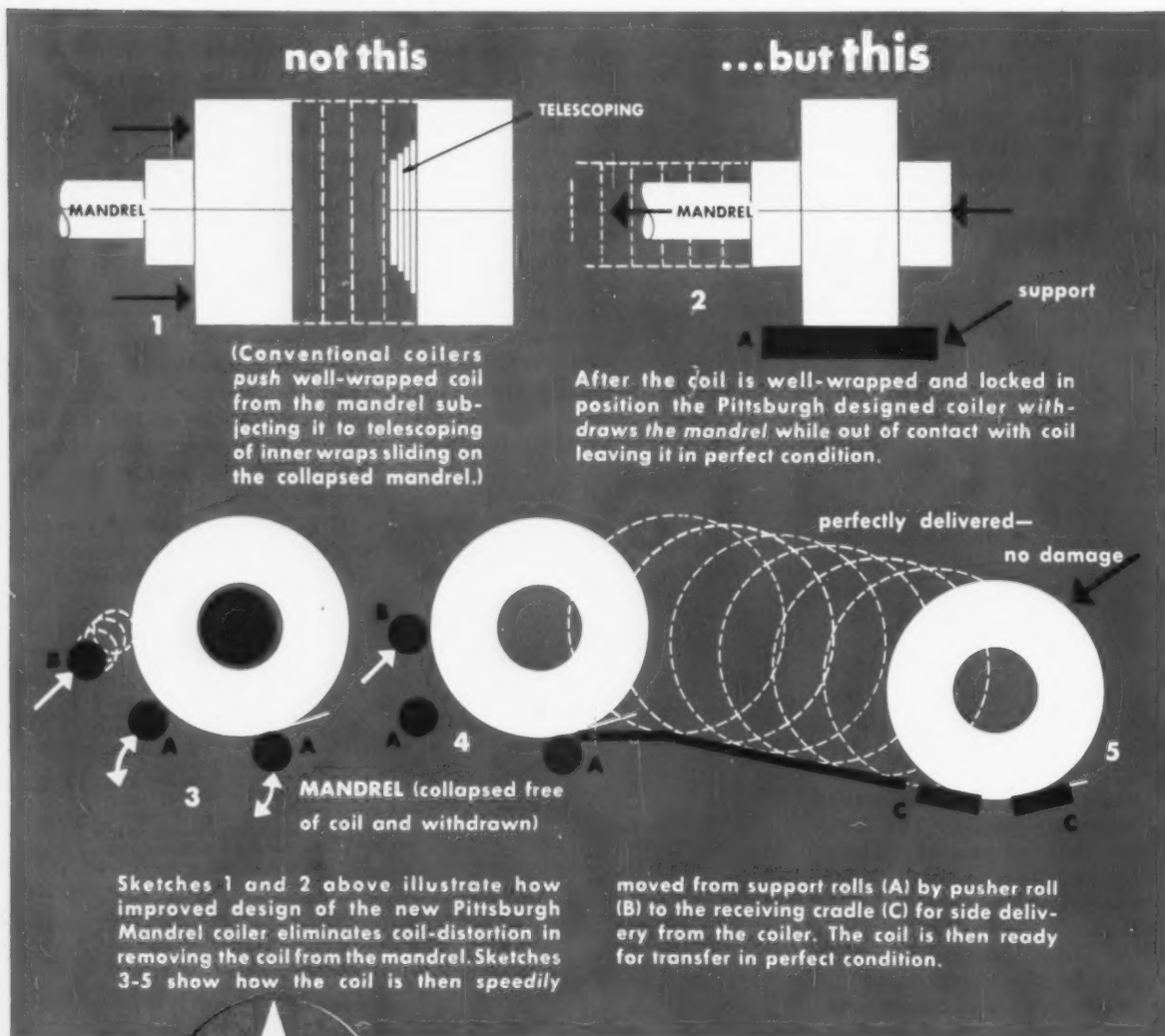
By J. R. Williams



# New hot strip coiler

by **Pittsburgh**

*Delivers each coil in perfect condition*



**Pittsburgh**  
ENGINEERING  
& MACHINE CO.

Division of Pittsburgh Steel Foundry Corporation

P. O. BOX 986, PITTSBURGH 30, PENNSYLVANIA  
PLANT AT GLASSPORT, PENNSYLVANIA

Rolling mill equipment by Pittsburgh performs in a superior manner because it is superior in design. Call us for advice on problems you may have with existing equipment and for quotations on new installations.





## Fair Weather, Say Business Barometers

**Both political parties agree . . . Booming business expected to continue through 1957 . . . Metalworking companies supplying the armed forces will share in a \$13 billion bonanza—By G. H. Baker.**

◆ **FEDERAL** business barometers point to another 12 months of bustling business.

Leaders within both political parties agree the healthy state of business shows every sign of holding up throughout 1957.

While some economists speculate that the level of business activity in the final six months of the year may slip somewhat from the fast pace of the first half, there is little doubt that overall business activity this year will roll along at comfortably high levels.

Even if a mild slump does occur in the final six months, it won't be enough to deflate the records that are now in the making on the basis of orders already on the books.

**Military Supplies . . .** Segments of both metalworking and electronic industries which supply equipment to the armed forces are expected to be among the most bustling in 1957. Take will be about \$13 billion.

Of the total national budget expenditures of \$67 billion, \$42 billion is for national security. Of this \$13 billion will be spent for aircraft, ships, tanks and other military equipment, both durable and perishable.

Government national security spending is vital to continued business prosperity. Currently it spends 25 cents of every revenue dollar on military "hard goods" and other durable items. Every 24 hours the federal government pays out \$100 million just for national security.

**Due to Rising Costs . . .** Higher cost of national defense is partially due to the higher cost of the pur-

chases. Steel and aluminum cost more today than a year ago. Contractors and subcontractors pass along their cost increases.

Another reason for the bigger pricetag on national defense: new weapons—more complex, more intricate—are more expensive.

Defense spending is going to stay high, in 1957, and the foreseeable future.

The defense agencies of the federal government have available to them in the current fiscal year about \$48 billion. They probably won't spend it all this year, will carry some into the new fiscal year, which starts July 1. Here's how the funds are accounted for:

New money for spending—\$36 billion; Unobligated money carried forward from previous years—\$12 billion. It adds up to more contracts for metalworking.

### Notice On Mergers

Anything that looks like a monopolistic merger by industrial or commercial concerns will be eyed with disfavor by the federal government this year.

Antitrust officials in the U.S. Justice Dept. won't restrict action to tacit disapproval. They will line up firmly behind legislation calculated to help them nail any presumed offenders, or would-be offenders.

Justice Dept. will push for passage of a pre-merger notification bill. Its lawyers stress the "notification" label, as opposed to legislation requiring pre-merger governmental approval. This, they say, would reduce chances of business activity disruption later.

Failure to cover acquisition of assets by banks hampers anti-

### Why Government Costs Are High

■ "Because of continued threats to world peace, U. S. military spending must remain at a high level. And because, also, Americans constantly demand more and expanded government services, there will be no sizable cuts in federal spending for non-defense purposes. At no time in the foreseeable future are we going to see any big cuts in government spending. When world tensions have eased off, we can then think about making some real savings, but I can not see that this is going to happen anytime soon."

George M. Humphrey  
Secretary of the Treasury



# "Call L. B. FOSTER CO.



# WE NEED PIPE"

What kind of pipe do you need? Seamless—pressure pipe—welded pipe? You'll find that one call can get you "*Faster-from-Foster*" deliveries from one of the largest pipe warehouse stocks in the country. Try us for all sizes, 1/8" thru 30", all wall thicknesses—and try us for the unusual or the hard-to-get items in tested, structural grade, carbon, alloy, or aluminum pipe, valves, fittings. Try your nearest Foster office today—Call or wire.

PIPE • RAILS • STEEL-SHEET PILING • PIPE PILES • H-BEARING PILE • BRIDGE RAILING



SINCE 1907



## **L.B. FOSTER co.**

PITTSBURGH • NEW YORK • ATLANTA • CHICAGO • HOUSTON • LOS ANGELES

merger work, is ripe for remedying, the Justice Dept. believes. They want a portion of the Clayton Act worded to apply to all bank acquisitions.

Prompt passage of a measure ordering corporations, partnerships, and associations to produce documents during the pre-complaint stage of government civil actions also is urged.

## Atomic Energy:

**Government or private industry is the question.**

Tug-of-war between advocates of government policy to encourage private industry to develop peaceful uses for atomic energy, and forces attempting to force the government to take over the job, will resume with renewed fury this year.

Strong efforts are expected in Congress, mostly by Democrats, to secure passage of a bill requiring the government to build from five to a dozen multi-million-dollar nuclear power reactors for "demonstration" purposes. A similar measure, sponsored by Sen. Albert Gore, D., Tenn., failed last year. Because of the shortage of nuclear scientific and technical resources, such a measure would drastically reduce private industrial atomic development.

Legislation to pave the way for easier and safer nuclear power development by private industry will also be pushed, including a program to provide catastrophe insurance for experimental nuclear reactors.

Outlook is that because of the near balance in Congress the government-take-over move will fail, and new aids for private development will be passed.

## Probes Are A Weapon

Democratic congressional leaders are building up a long list of investigations and probes which they hope will make the Eisenhower Administration squirm, give them ammunition to strengthen their control of Capitol Hill two years from now, and recapture the White House in 1960.

High on the list of headline-hunting investigations is a running probe of lobbying generally, and lobbying of business groups in particular, by a committee headed by Sen. John L. McClellan, D., Ark. Chances are better than fair that this will produce some tightening of the lobby registration act, and new regulations controlling activities of lobbyists.

Other probes, many continuations of last year's, include: Businessmen advising government agencies without pay (WOC's), by Rep. Emanuel Celler, D., N. Y.; various government contracts, including the Nicaro nickel expansion; big industry, including possibly steel, aluminum, and automobile manufacturing; the Administration's power, mineral, and reclamation and activities.

## Laissez-Faire

Government controls over materials, prices, and income is not in sight for 1957—barring war. The U.S. has demonstrated during the past four years that it can maintain a \$40 billion-a-year defense program and still not give up a single civilian luxury.

The ability of the country to sustain a guns-and-butter economy is no longer regarded as a miracle of planning. It is now accepted as routine accomplishment. The tax burden, however, is a heavy one.

## WASHINGTON NEWS

Nickel, tight for the past six years, shows no sign of easing until 1958. But invoking controls could not add a single pound of any material to the available supplies, the Eisenhower Administration points out.

A program of controls can only take supplies from one user and give to another.

## Little Action on T-H

Despite extreme interest by both business and labor in major amendments in the Taft-Hartley labor law, the poles-apart positions of the groups, and the roughly stalemated Congress will prevent all but the most minor changes this year.

President Eisenhower is expected to ask for about a dozen amendments, many of them highly controversial, opposed by either labor or business.

The result, as in the past two years, probably a virtual impasse. The principal fight will undoubtedly revolve around labor's demand for repeal of the T-H sanction of state "right to work" laws, and business efforts to put an outright ban on secondary boycotts. President Eisenhower's proposals will run down the middle.

## Congress Will Axe Taxes For Small Business

■ All signs point to the acceptance by Congress of President Eisenhower's plan for lower taxes for small business. This will mean no cuts for big business. Both the President and Secretary of the Treasury Humphrey are for balanced budget, against corporate tax reduction.

### Problems involved:

- 1) How to relieve pressure on unincorporated business without giving every taxpayer a cut.
- 2) Each congressman is intent on accomplishing the program so his own political party can claim the credit.

### Outlook for all round relief:

Not until the government income shows a surplus of \$2 billion, unlikely under the current situation.



**NOW...a great team**  
for **COMPLETE**  
"ONE-SOURCE"  
**BARREL FINISHING EQUIPMENT,**  
**SUPPLIES and SERVICE**

**ON-THE-SPOT SERVICE**

## 23 Barrel Finishing Specialists to Serve YOU...

The leaders in barrel finishing are now a sales team...to offer the *most complete barrel finishing service* in industry today. Added to the present aggressive SPEED-D-BURR organization will be the distributors under the well known Minnesota Mining & Mfg. Co. banner who will also make available the famous SPEED-D-BURR line of modern barrel finishing equipment and supplies. Each of these strategically located outlets has complete facilities to process large or small parts in experimental, developmental or production quantities, thus assuring a wide variety of on-the-spot services in engineering, processing and technical information. Look for the distributor nearest your plant—for complete "one-source" service.

SPEED-D-BURR engineering knowledge that saved a major airframe manufacturer more than \$140,000 per year in finishing costs for parts like this (photo right) will be available through all 23 distributors.

Important industrial areas not shown may be open for alert distributor-barrel finishing specialists.

*Service Is Our Most Important Product...It Does Not Cost - IT PAYS!*

**SPEED-D-BURR CORPORATION**  
3613 SAN FERNANDO ROAD, GLENDALE 4, CALIF.

Speed-D-Burr "Futurama" Unit



- 3M BUFFALO, NEW YORK**  
W. M. Fotheringham  
977 Niagara Street  
Phone: Lincoln 9088
- 3M CHICAGO 44, ILLINOIS**  
Micro Deburrring Co.  
5827 West Lake Street  
Phone: Esterbrook 9-0667
- 3M CHICOPEE, MASSACHUSETTS**  
Mosher Company  
15 Exchange Street  
Phone: Lyceum 4-9605
- 3M CINCINNATI, OHIO**  
Mechanical Finishing Company  
7032 Vine Street  
Phone: VALley 2851
- CLEVELAND 5, OHIO**  
Ohio Hydro Deburrring Company  
10926 Avon Avenue  
Phone: VUlean 3-8131
- 3M DETROIT, MICHIGAN**  
A. T. Wagner Company  
2700 Wight Street  
Phone: LOraine 7-3171
- 3M HAZEL PARK, MICHIGAN**  
Metals Finishing Corporation  
926 East 10 Mile Road  
Phone: JOrdan 4-6549
- LOS ANGELES, CALIFORNIA**  
Speed-D-Burr Corp.  
3613 San Fernando Road  
Phone: CHapman 5-6883-4
- MILWAUKEE 12, WISCONSIN**  
Norton, Inc.  
3876 North Park Washington Ave.  
Phone: EDgewood 2-8080
- 3M MINNEAPOLIS, MINNESOTA**  
Northern Machinery & Supply Co.  
2001 Washington Avenue South  
Phone: FEderal 5-1125
- 3M NEWARK, NEW JERSEY**  
Metal Finish, Inc.  
410 Frelinghuysen Avenue  
Phone: BIGelow 2-6211  
Metals Parts Processing  
165 Delancy Street  
Phone: MITchell 2-5314
- \*Plating Products Co.  
352 Mulberry Street  
Phone: MAket 3-3392
- 3M PHILADELPHIA 22, PENN.**  
Deburrrco Incorporated  
2212 North 27th Street  
Phone: STEvenson 2-0484
- 3M PROVIDENCE, RHODE ISLAND**  
Franklin Supply Company  
444 Washington Street  
Phone: PLantation 1-3000
- 3M ROANOKE, VIRGINIA**  
Noland Company, Inc.  
1226 Center Avenue  
Phone: 4-5561
- 3M ST. LOUIS, MISSOURI**  
Brite Deburrring Company  
2612 South 13th Street  
Phone: PROspect 1-3788
- 3M SAN DIEGO, CALIFORNIA**  
Acme Tool & Supply Company  
2745 Kettner Blvd.  
Phone: CYprus 8-7181
- SAN FRANCISCO, CALIFORNIA**  
Industrial Materials Co.  
383 Brannan Street  
Phone: EXbrook 2-8505
- 3M SANFORD, NORTH CAROLINA**  
General Foundry & Machine Co.  
204 Maple Avenue  
Phone: SPring 3-3811
- 3M STRATFORD, CONNECTICUT**  
Precision Tumbling & Supply Co.  
149 Ravencrest Drive  
Phone: EDison 7-7390
- 3M SYRACUSE 1, NEW YORK**  
Syracuse Supply Company  
314 West Fayette Street  
Phone: 2-9231
- 3M YORK, PENNSYLVANIA**  
Fulton, Mehring & Hauser  
Beaver & North Streets  
Phone: YOrk 8-2393

\*Mill supply houses —  
not tumbling specialists.





## FORECAST: An Even Better Year In '57

**Next twelve months should see rise in aluminum fabrication, record use of steel . . . Planemakers have an \$8 billion backlog . . . Auto companies may spend \$220 million with part makers and suppliers—By R. R. Kay.**

♦ **BIGGEST BUSINESS** year yet is forecast for the West Coast area. Here's a capsule rundown on what this new year will mean for metalworking in the area:

**Aluminum . . .** Count on Pacific Northwest aluminum producers for well over 550,000 tons—roughly 30 pct of U. S. production. Basic producers will further process 275,000 tons. With this plentiful supply of the metal in the Pacific Northwest, signs point to a hike in aluminum fabrication there.

Most of the new basic production facilities are going to the East, closer to their markets. Future aluminum expansion in the Farwest depends on growth of electric power. Power people say nine million kw more will be needed by 1970. But the 14 projects now underway will add only three million kw to the region.

**Steel . . .** Steel users in the 11 Western States will devour a record 7.4 million tons in 1957—more if they can get it. That's about 200,000 tons ahead of 1956.

Despite steelmakers' large-scale expansion plans, now in the works, there won't be enough steel to satisfy the growing demand. One eastern producer is seriously eyeing this region for a large mill.

California alone adds 500,000 new residents every year. Steel demand closely follows the population increase. Some two million tons of steel products, manufactured or fabricated, will again have to be brought in. There would be more manufacture of appliances in the area if the steel were available.

**Aircraft . . .** A sure long-range bet is booming business for at least 10 to 15 years. Sales for 1957 will reach \$4 billion—slightly higher than in 1956.

There will be greater emphasis on guided missiles, new materials, methods, and manufacturing processes. New machine tools will be needed, with the accent on more automation in aircraft manufacture.

Planemakers in this area have an \$8 billion backlog. It consists of \$6 billion for military work, \$2 billion for commercial transports.

The aircraft industry holds the No. 1 spot as the West Coast's largest manufacturing employer. Some 300,000 workers drew a \$34 million weekly paycheck.

**Auto Assembly . . .** Automakers on the West Coast this year will roll 700,000 cars off their assembly lines. The Big Three—Chrysler, Ford, General Motors—will pay

out \$200 million to West Coast parts makers and suppliers.

The Farwest is a region of wheels. California tops the nation in auto registrations. It's the great "user center" of the world. And the zooming population is sure to create an even larger automobile market in 1957.

**Electronics . . .** Sales in 1957 will hit a new high of \$1.4 billion—one-sixth of the nation's total. Once the stepchild of the aircraft industry, electronics is now a lusty giant in its own right, and there are no signs that it has even begun to reach its majority.

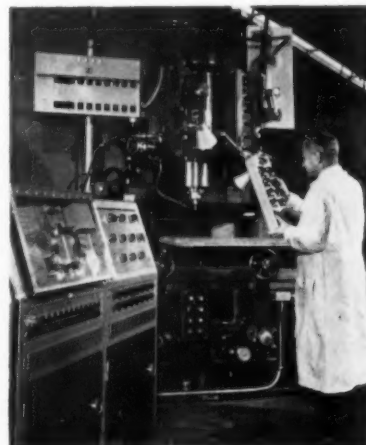
Big sales are for the military. However, the area's electronics makers produce many industrial, commercial, and household items. Their 90,000 workers make them the second largest manufacturing employer on the West Coast.

Industrial expansion on the Coast is continuing at break-neck speed.

### Automatic Tape Control Simplifies Milling

♦ A NEW tape control system is used to automatically control a template milling operation. Described as extending the advantages of automatic machining to small-lot production of parts and tools, the unit can automate such types of tools as lathes, boring mills and contouring mills.

Tape control system was developed by Autonetics, a division of North American Aviation, Inc., Los Angeles.



start  
with  
quality...

**STEEL WITH SELLING POWER...**  
**A.W. Cold Rolled**

Modern Electrolux® vacuum cleaners get a quality start—in just one of many aspects—in that body sections and rear covers are stamped from Alan Wood cold rolled sheet. The stamping demands are neither difficult nor easy, but because of careful study and testing, represent a happy mating of basic material and performance requirements.

The sheet, which had its beginning in scientifically chosen high-grade ores from Alan Wood mines, meets or betters Electrolux demands for gauge, finish, uniformity and performance—resulting in maximum production efficiency and minimum rejects because of material quality.

Alan Wood's initial demands upon itself for precise metallurgical study and quality control provide, we believe, a supplementary sales feature for Electrolux. This feature is a basic material of such consistent uniformity and high quality as to contribute reliability to the end product—a basic requirement for volume sales.

For detailed information on any Alan Wood product, write Marketing Division, Dept. CR-S64.

## ALAN WOOD STEEL COMPANY

steelmasters for 131 years • CONSHOHOCKEN, PENNA.

DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia  
New York • Los Angeles • Atlanta • Boston • Buffalo • Cincinnati  
Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul  
San Francisco • Seattle

Montreal and Toronto, Canada—A. C. Leslie & Co., Limited

IRON PRODUCTS  
"Swede" pig iron

STEEL PRODUCTS  
Plates (sheared)

A.W. Dynalloy

(high strength steel)

Hot rolled sheets

Hot rolled strip

Cold rolled sheets

Cold rolled strip

ROLLED STEEL

FLOOR PLATE

A.W. ALGRIP

abrasive

A.W. SUPER

DIAMOND pattern

COAL CHEMICALS

A.W. CUT NAILS  
Standard &  
Hardened

MINE PRODUCTS

Iron ore

concentrates

Iron powder

Crushed stone

Sand

COKE

Foundry,

industrial &

metallurgical

PENCO METAL

PRODUCTS DIVISION

Steel cabinets,  
lockers & shelving





## Another \$1 Billion Year for Builders

**Need of major companies to improve productivity is a big factor in machine tool optimism . . . Defense contracts will also mushroom in top defense spending year since Korea—By E. J. Egan, Jr.**

♦ IN LOOKING AHEAD to 1957, Harlow H. Curtice, president of General Motors, disclosed that a major part of the company's 1957 outlay for capital goods will be spent on machine tools.

This vast expenditure, he explains, is necessary to take advantage of the new developments offered in new machine tools. With an annual productivity factor in GM's labor contract, a major problem each year is to match productivity gains with this built-in increase in labor costs.

GM's expenditures will probably be matched by other auto companies that are in the same situation. And it's one of the principal factors behind the optimistic outlook for machine tool builders.

**The Reason Why . . .** That's why machine tool builders are confidently looking forward to their second consecutive \$1 billion year, and only the second peacetime year to pass that mark.

One top authority predicts that machine tool sales will jump more than 20 pct in 1957, but that the high level of backlogs will keep shipments from rising more than 5 to 10 pct.

Reasons for the expected increase in already high level business are not confined to the good demand from automotive and other industries that will invest heavily in tools for production of civilian goods.

There will probably be more defense buying than at any time since the Korean conflict.

Another important factor in the background is the "trigger" con-

tracts that some 80 machine tool builders have. These would take effect immediately should mobilization be necessary in an extreme emergency or war.

**Room For Improvement . . .** Judged by the standards of 5 and 10 years ago, today's automated machining lines are indeed spectacular. But there's still plenty of room for improvement, according to Del S. Harder, executive vice president of Ford Motor Co.'s basic manufacturing divisions.

Mr. Harder's position and production experience qualify him as a top expert on automation. What's more, he's generally credited with having coined the word.

He told the nation's machine tool builders recently that automation has created some pressing manufacturing problems. And

he'd appreciate their help in solving them.

First problem on his list is the completely special machine. Mr. Harder says these are very costly inasmuch as they rarely lend themselves to major changes in product design. He pointed out that they may become obsolete in one to five years. Moreover, he points out that their salvage value is virtually nil compared to the original cost.

**Need Flexibility . . .** The trouble is that the components of special machines are not standard, except to the firm that builds them.

He thinks that "building block" or "unitized" machine tools are the answer to this problem. He feels that if things like spindle heights and mounting dimensions can be standardized throughout the machine tool industry, it will permit true interchangeability regardless of make.

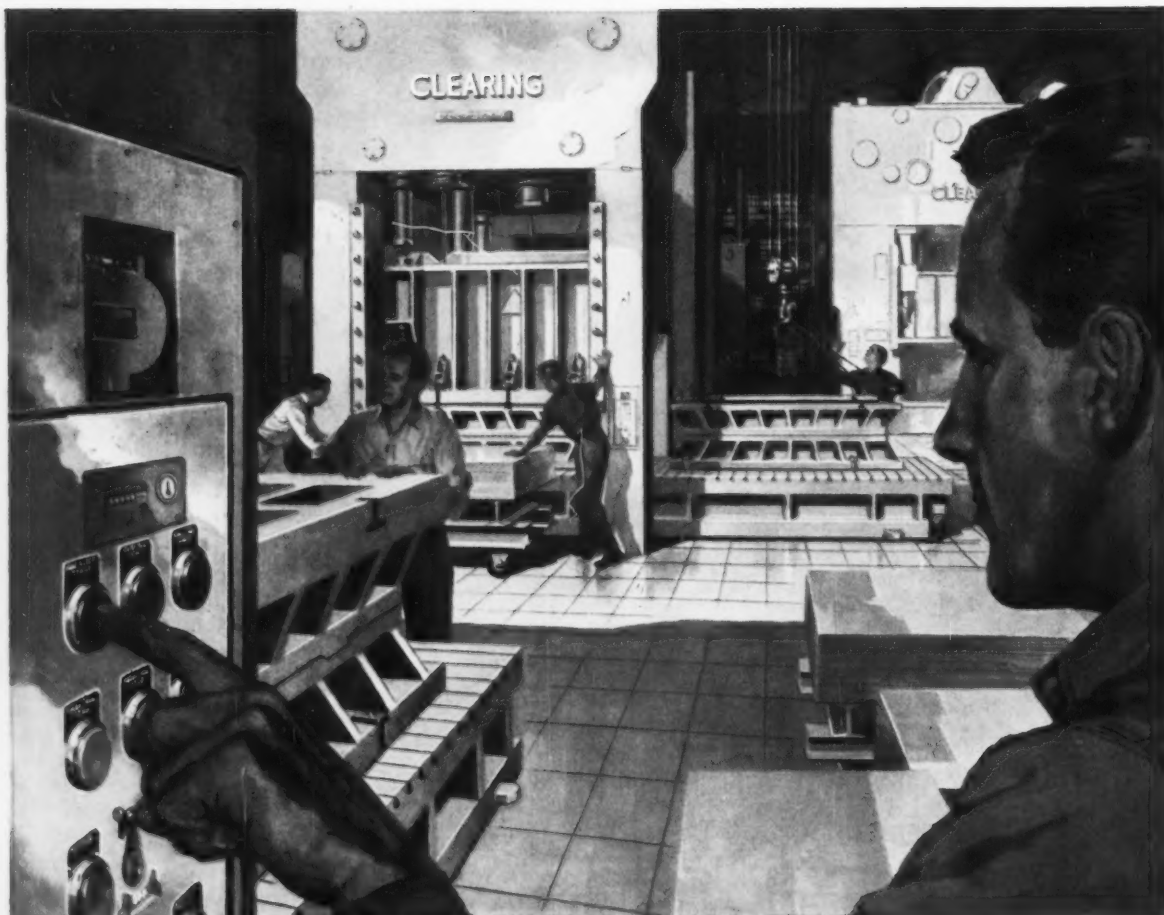
But he assures builders that the users don't want to dictate the design features that would make such flexibility possible.

To counter the argument that industry-wide standards would cause builders to give up some of their most cherished design features, he said that this would really work to the builder's advantage. He pointed out that in slack periods, standard units could be produced for stock.

"Another thing we need," he said, "is greater ease of maintenance built into the machines you produce. Motors, clutches and drives should be arranged for rapid removal when replacement becomes necessary."



"Skinner—the star of this movie happens to be the openhearth!"



## Imagine! Presses where dies are changed the way you turn on the light!

Here's an arresting new method to put more productive hours into a working day. Clearing moving bolster presses shrink the hours required from changing jobs on a press, or a press line, to minutes. Push-button die setting reduces downtime in direct proportion to the amount of job changing required in a plant—saving up to 50% of lost production hours in some instances.

These new Clearing presses are designed with a bolster that is rolled from left to right through the die area. Dies for the next job are set up outside the press during a press run. When the current job is completed, a touch of the control button powers the new dies into

position under the slide. Power actuated clamps release the old dies, clamp in the new—and with proper slide adjustment (also powered) the new job is ready to go.

Clearing engineers have designed these presses to combine with other bold new ideas for increasing press productivity. Moving bolsters will work, for example, with Transflex feeds. They may also be designed on either top drive or bottom drive machines. If this unusual new idea in press design appeals to you, remember it is only one of many Clearing innovations that can help you boost manufacturing output. Call on a Clearing engineer to discuss these ideas. There'll be no obligation, of course.

### **CLEARING PRESSES** THE WAY TO EFFICIENT MASS PRODUCTION **CLEARING MACHINE CORPORATION**

6499 WEST 65th STREET • CHICAGO 38, ILLINOIS • HAMILTON PLANT, HAMILTON, OHIO

Division of U. S. INDUSTRIES, INC. 







## The Iron Age SALUTES

### **J. Robert Jones**

Vice president, Kearney & Trecker Corp., and chief of BDSA's Metalworking Equipment Div., he is one of the machine tool industry's top sales engineers; an expert on distribution and technical problems.

J. Robert Jones ruined many a good suit in his day showing a potential customer what was needed to get top performance out of machinery. These frequent contacts with oil, soup, and flying chips won him the reputation of a back-shop, dirty-hands sales engineer who (1) knew his equipment and, (2) could show you how to cut costs. Bob Jones didn't begrudge his ruined clothing. After all, he was doing what he liked.

In fact he was doing so well Kearney & Trecker Corp. named him vice-president—sales, and the Eisenhower Administration appointed him director of the Metalworking Equipment Div., Business & Defense Services Administration.

The wide swath of impressed people in Bob Jones' past can be traced back to Milwaukee, his home town. He was born there in 1910. After graduating from the University of Michigan with a degree in mechanical engineering, he tried his hand as a plant engineer for two years in a Milwaukee firm. Then came his first taste

of sales as general manager of a Menasha, Wis., company. The flavor must have been pleasing.

In 1939, Mr. Jones joined Kearney & Trecker as sales engineer in Newark, N. J. The company soon noted the progress he was making with new customers, began moving him closer to the home office. By 1953 he was recalled to Milwaukee and given the job as sales manager of the Standard Machine Div.

When the company proposed a tool-lease program for its milling and boring machines, Bob Jones saw the plan had immense possibilities, and went to work.

The plan was an outstanding success; has netted the company more than \$5 million in new business. But more important, perhaps, it gave Bob Jones valuable experience which later was to be utilized by BDSA. His willingness to accept a government post which may at times become a thankless task, is evidence that even salesmen consider some things more important than selling.

# LACLEDE STEEL JOISTS



*better steel joists  
produced by electronically controlled welding*



## LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI

Producers of Quality Steel for Construction and Industry



ROBERT S. LYNCH, elected chairman and chief executive officer, Atlantic Steel Co., Atlanta, Ga.



HOWARD B. JOHNSON, elected president, Atlantic Steel Co. Atlanta, Ga.



H. F. ROBERTSON, named manager, technical planning, Bakelite Co., Div. of Union Carbide and Carbon Corp.



THORNTON F. HOLDER, named director, research, Diamond Alkali Co., Cleveland.

## The Iron Age INTRODUCES

**Charles W. Burton Jr.**, elected president, **Anchor Post Products, Inc.**

**John W. Little**, elected president, **Gosloin-Birmingham Manufacturing Co.**, Birmingham, Ala.

**Wesley D. Hamilton**, elected president and chief executive officer, **International Steel Co.**, Evansville, Ind.

**Edwin J. Kaiser**, named staff vice president, manufacturing, **Giddings & Lewis Machine Tool Co.**, Fond Du Lac, Wis.; **George K. Cassady**, named general manager, Davis Boring Tool Div.; **Guy E. Lingenfelter**, named sales manager, G&L and Hypro Div.

**W. D. McDonald**, named vice president, sales, **Sun Tube Corp. of Canada, Ltd.**, subsidiary of Sun Tube Corp., Hillside and Washington, N. J.

**John R. Caulk, Jr.**, named executive vice president, **Hussman Refrigerator Co.**, St. Louis; **W. A. Vormehr, Jr.**, named vice president, manufacturing.

**John W. Hornsby**, elected executive vice president, **New York Shipbuilding Corp.**; **John B. Letherbury**, elected vice president, engineering; **Harold M. Sandberg**, elected vice president, estimating; **Gerald T. Smith**, elected vice president, purchasing.

**Clyde A. Rodgers**, named asst. superintendent, oxygen steel making production, **Kaiser Steel Corp.**, Fontana, Calif.

**Leo J. Brancato**, appointed vice president, **Heli-Coil Corp.**, Danbury, Conn.

**A. E. Watts**, elected vice president, plant operations, **Sun Tube Corp. of Canada, Ltd.**

**George R. Lawson**, named director, marketing, Industrial Div., **Pennsalt Chemicals'**, Philadelphia.

Following appointments are at the Youngstown steel plant of **Republic Steel Corp.** **C. W. DeZutter**, named superintendent, open hearth, strip and bar mills; **L. A. Schettler**, named superintendent, Bessemer rolling and finishing mills; **G. W. Ransom**, appointed superintendent, roll shops.

**Charles F. Miller**, named controller, **Industrial Enterprises, Inc.**, New York.

**William C. Rowland**, named foundry superintendent, **Alten Foundry & Machine Works, Inc.**

**S. George Lawson**, named operations manager, photoflash and incandescent lamp operations, **Sylvania Electric Products Inc.**, Salem, Mass. and St. Marys, Pa.

**George D. Williams**, appointed manager, **Bailey Meter Co.**, Boston district office.



Says  
"Dependable  
Dan"—

**Buy-as-you-go  
warehouse steel  
helps you change  
dollars-in-stock  
to cash-in-bank**

For helpful action  
**RELIANCE STEEL**  
DIV. DETROIT STEEL CORP.  
General Office: Detroit 9, Mich.

**PLANTS**

CHICAGO 8                      CAnal 6-2442  
CLEVELAND 27                Vulcan 3-3600  
DETROIT 28                   Webster 3-5866  
HAMDEN, CONN.              State 7-5781

**CUSTOMER "REP" OFFICES:**

Dayton, O., Cedar Rapids, Ia.  
Des Moines, Ia., Grand Rapids, Mich.  
Indianapolis, Ind., Jackson, Mich.  
Milwaukee, Wis., New York, N.Y.  
Rochester, N.Y., Rock Island, Ill.  
St. Louis, Mo., Toledo, O.  
Worcester, Mass.

**Processors and Distributors**

**RELIANCE**  
*Job-Fitted*  
**READY-TO-USE  
SHEET and STRIP  
STEEL**

**COLD ROLLED STRIP**  
Coils • Cut Lengths • All Tempers  
**FLAT CR SPRING STEEL •**

Soft Annealed  
Hard Rolled Untempered  
Coils • Cut Lengths  
**SHEETS**

Cold Rolled • Hot Rolled  
Hot Rolled Pickled  
Galvanized • Long Terne

*Experience-Fitted  
to Your Job*

\*Stocked only in Detroit

**P. R. Flood**, named general manager, Beloit, Wis., Works, **Fairbanks, Morse & Co.**, Chicago; **W. P. McAnally**, named manager, Pomona Works; **C. H. Johnson**, named general manager, Stuttgart, Ark.; Works of the corporation.

**Frederick A. Wolfe, Jr.**, named product sales manager, panelescent lamps, Lighting Div., **Sylvania Electric Products Inc.**, Salem, Mass.

**Francis C. Wheeler** and **Gerald Doane**, named general foremen, Toolroom and Dryer Assembly Depts., respectively, **Maytag Co.**, Newton, Iowa.

**J. Turner Moore, Jr.**, and **Robert E. Valk**, appointed group executives, Battery Div., United States, Wire and Cable and Foundry Divisions, respectively, **The Electric Auto-Lite Co.**, Toledo, O.

**William H. Smith**, named asst. to heating and cooling sales manager, **Perfection Industries Div., Hupp Corp.**, Cleveland.

**Charles H. McKenney**, named general traffic manager, **Northeast Airlines, Inc.**

**Edward S. Prentice**, named manager, international activities, **Stanford Research Institute**, Menlo Park, Calif.

**Louis L. Fisher**, named senior project engineer, **Levinthal Electronic Products, Inc.**

**Bernard S. Reckseit**, named chief engineer, **Ransohoff, Inc.**, Hamilton, O.

**James D. Blanchard**, named sales engineer, **Steel & Machine Tool Sales Co.**, Houston, Tex.

**Ray Dollar**, named representative, **Warner Electric Brake & Clutch Co.**, Beloit, Wis.

**Ralph E. Bond**, appointed deputy general manager, administration, Electronics Div., **American Machine & Foundry Co.**, Boston.

**PERSONNEL**



**KEMPTON DUNN**, elected chief executive, **American Brake Shoe Co.**



**GERALD F. TUREK**, named sales representative, Milwaukee, **Hanson-Van Winkle-Munning Co.**, Matawan, N. J.



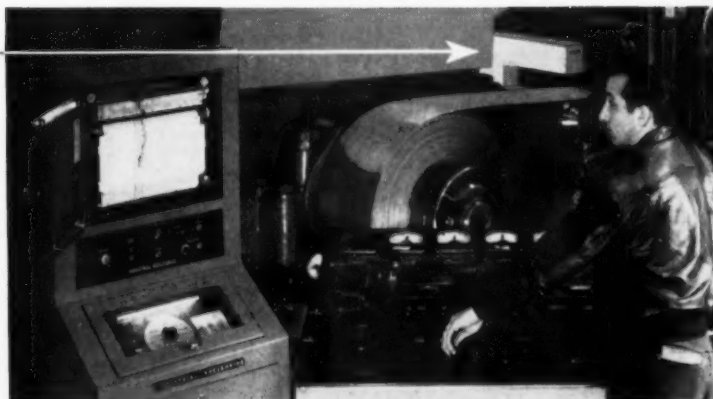
**F. F. KEMP**, named asst. industrial engineer, Warren, O., **Republic Steel Corp.**



**I. H. LUNDGREN**, named district chief engineer, Warren district, **Republic Steel Corp.**



**ATOMS-FOR-PEACE  
HELP ROLL AND CONTROL  
DSC STRIP**



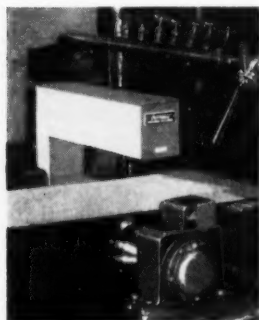
**DSC STRIPMANSHIP teams up with *AccuRay*<sup>®</sup>  
to give strip users a new high in gauge reliability**

**ACCURAY AT WORK**

AccuRay electronic gauge controls are working on one of our Detroit Plant 4-Hi reversing strip mills. The other 4-Hi at Detroit, also the one at our Eastern Plant (Hamden, Conn.) and the big tandem cold sheet mill at our Portsmouth (Ohio) Division are being similarly equipped.

**WHAT ACCURAY IS**

AccuRay is the trademark name of a nuclear thickness-measuring instrument made by Industrial Nucleonics Corporation, Columbus, Ohio. It is a peace-time application of principles discovered in atom bomb research.



THE GAUGE



THE RECORDER

**WHAT ACCURAY DOES**

This gauge measures, records and controls the thickness of steel as well as other materials. It does this continuously and automatically while the product is being made . . . and without touching it.

**HOW ACCURAY WORKS\***

The gauge combines within itself a Strontium 90 radio-isotope (electron emitter) and an electron detector. The strip runs between the isotope and the detector without touching either.

The detector "counts" the electrons passing through the moving strip. The fact that the number of the electrons varies in proportion to the strip thickness is the basis for measuring the thickness.

The detector transmits these thickness variations to a recorder which visibly traces them on a chart in split thousandths of an inch. It also "feeds back" this "information" to electronic controllers which operate the roll screw-down motors on the mill. These motors open and close the rolls to decrease or increase their squeeze on the strip . . . thereby continuously "correcting" the gauge within specified tolerance limits.

**WHAT ELECTRONIC CONTROL MEANS TO DSC STRIP USERS**

Gauge consistency, within standard or restricted tolerances, is characteristic of DSC STRIP. That, together with job-suited temper and finish, accounts for consistently good performance records . . . even without AccuRay control.

Now AccuRay controls make possible even greater gauge reliability. Users will profit from smoother, steadier, faster production, longer tool and die life, lower end-product costs.

*\*Interested in more about AccuRay gauge control  
. . . or about any DSC service?*

*Just call your nearest DSC Customer "Rep"*

*Customer Satisfaction Is Our Business*

DSC MILL PRODUCTS, PORTSMOUTH DIVISION, PORTSMOUTH, O.

Hot Rolled and Cold Rolled Sheets • Low and Medium Carbon Manufacturers' Wire • High Carbon Specialty Wire • Aluminum Cable Strand Reinforcement • Rope Wire • Tire Bead Wire • Welded Wire Fabric

DETROIT MILL DIVISION, DETROIT, MICH.  
EASTERN MILL DIVISION, HAMDEN, CONN.

Cold Rolled Carbon Steel Strip  
Flat Cold Rolled Carbon Spring Steel



**DETROIT STEEL  
CORPORATION**

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:

Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio, Dayton, Ohio, Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Indianapolis, Jackson, Mich., Louisville, Ky., New York, St. Louis, Toledo, Worcester, Mass.

COPYRIGHT 1957

# CONTINENTAL® FLAT & SHAPED WIRE SAVES STEPS



...cuts corners  
in production

● STANDARD AND  
SPECIAL SHAPES  
IN MANY SIZES

● IN A WIDE  
RANGE OF  
TEMPERS AND  
FINISHES

● PRECISE  
MANUFACTURING  
CONTROL

Shaped wire often saves steps by eliminating forging, stamping, and rolling operations—giving you a ready-made molding, product trim, or component that requires a minimum of further fabrication. Saves metal, too. From Continental you can obtain many cost-cutting wire shapes—V-shaped, oval, square, rectangular, triangular, keystone-shaped, and others.

Practically any temper, finish, or analysis in low carbon and medium low carbon steels can be specified to give you the *right* wire for the job—including #3 finish wire for electroplating.

Continental Special Shaped Wire is made under strict quality control to assure uniformity. You get a better product and fewer rejects—qualities that Continental wire customers especially appreciate. Let us help you save production steps, too. Write for the complete story of Continental wire today.

Wire  
Specialists  
for over  
Half a Century

## CONTINENTAL

STEEL CORPORATION • KOKOMO, INDIANA

PRODUCERS OF Manufacturers' Wire in many sizes, shapes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special wire. Also, Coated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

R. D. Glenn, named general manager, vinyls, Plastics Div., Bakelite Co., Div. of Union Carbide and Carbon Corp.; J. E. Brister, named general manager, Polystyrene; Dr. C. M. Blair, Jr., named general manager, polyolefines; A. A. Boehm, named general manager, phenolics.

Carl R. Viars, appointed press sales engineer, Hamilton Div., Baldwin-Lima-Hamilton Corp., Detroit sales office; Clarence A. Cheney, named office manager and inside sales representative, Hamilton Div. presses.

Herbert G. Haussig, appointed to engineering staff, Johnston and Funk Titanium Corp., Wooster, O.

James E. Borchert, named general purchasing agent, productive materials and operating supplies, central purchasing operation, A. O. Smith Corp., Milwaukee.

T. Watson Outwater, named special representative, Charlotte, N. C., Revere Copper and Brass Inc., Rome, N. Y.

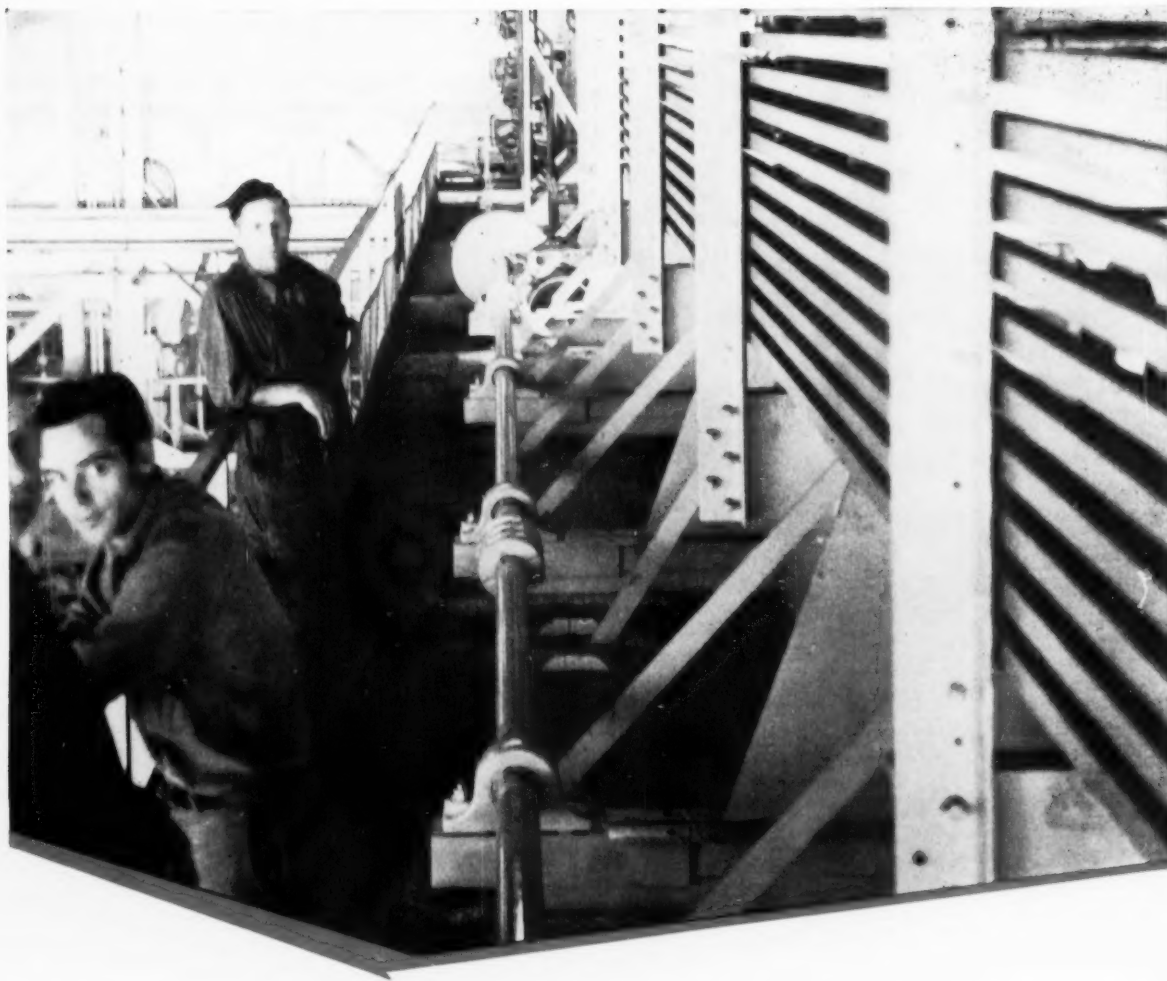
Frederick J. Hooven, named executive engineer, advanced Ford car product engineering, Ford Motor Co., Dearborn, Mich.; J. L. Hooven, named executive engineer, advanced Ford truck product engineering.

Frank J. John, appointed to electromechanical engineering unit, Materials and Processes Lab., Large Steam Turbine-Generator Dept., General Electric Co., New York.

D. W. Hutcheson, named representative, New England, The Bennett Manufacturing Co., Alden, New York.

John J. Durnan, named eastern regional product engineer, Behr-Manning Co., Troy, N. Y., Div. of Norton Co.

Ned I. Malcolm, named sales promotion representative, Danville, Ill., plant, Hyster Co.



## here's how **Bearings, Inc.** cuts the overhead on overhead cranes

This 30 ton crane with a 95 foot span was so inefficient it lost many hours of work every month. The Bearings, Inc. engineer recommended a complete conversion to anti-friction bearings and showed plant management how easily and inexpensively the conversion could be accomplished.

We supplied all bearings, seals, housings, and caps for 16 bridge wheel bearing journal boxes. The drive motor was converted to roller bearing end bells. Main drive line shaft from the motor to the wheels was converted to roller bearing pillow blocks. An adapter on the wheel axle eliminated machining. The only additional work needed was to weld a plate with bolt hole under the crane frame where units were mounted.

Crane now starts under load at first contact point on control and is the fastest crane in the plant. Crane was pulling 350 to 400 amps.; now uses less than

200 amps. Crane operator withdrew a request for transfer to another crane after conversion was completed.

Do you have a slow moving, inefficient crane in *your* plant? Ask our branch nearest you to show you how it can be converted to a fast, efficient piece of equipment at a minimum expense. Call or write NOW.

*Rendering bearing service in the territories adjacent to our branches, listed below.*

## **BEARINGS, INC.**

**OHIO:** Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Elyria  
• Hamilton • Lima • Mansfield • Toledo • Youngstown • Zanesville

**INDIANA:** Ft Wayne • Indianapolis • Muncie • Terre Haute

**PENNSYLVANIA:** Erie • Johnstown • Philadelphia • Pittsburgh • York

**WEST VIRGINIA:** Charleston • Huntington • Wheeling

**NEW JERSEY:** Camden • **MARYLAND:** Baltimore

*Subsidiaries:* Balanrol Corp. • Buffalo, N. Y. •  
Kentucky Ball and Roller Bearing Co. • Louisville, Ky.



Is your part illustrated? These are representative of the shapes that can be cold formed more effectively with Granodraw.

## GRANODRAW<sup>®</sup> PROCESS INCREASES TOOL LIFE 2-5 TIMES IN COLD HEADING STEEL FASTENERS

Thorough research, in cooperation with a leading manufacturer of headed fasteners, has proved the value of Granodraw phosphate coating of stock prior to cold working. Typical of the improvement in tool life and in production are the examples shown in the table.

But the advantages do not stop here in cold heading fasteners or cold working other products. This chemical treatment process permits greater speed of draw; greater reductions within the physical limits of the metal; more passes with the same number of intermediate treatments; and the possibility of fewer process anneals. It also results in less downtime of machines, better surface finish on products, cold forming of more complex shapes, fewer rejects, and a cleaner shop.

Write us for complete information about Granodraw and its application in cold forming operations.

PRODUCTION AND TOOL LIFE

PRODUCT	MATERIAL		AV. PIECES PER DIE DRESSING	
	Tool	Stock	Granodraw-Treated	Other Treatment
3/8 x 7/8 rivet	Hardened Alloy Steel	1010 Steel	647,000	180,500
5/16 x 24 flat head shoulder bolt	Hardened Alloy Steel	1010 Steel	26,000	5000-8000
Hex Head Cap Screws	Hardened Alloy Steel	1038 Steel	53,000	13,000-14,000
1/4 x 20 Hex Machine Bolt	Hardened Alloy Steel	1018 Steel	28,000	13,000

Note. Although investigations on the life of carbide tools are not completed, one item deserves mention. A 5/16 x 24 hex head shoulder bolt showed a strikingly low carbide tool life of 67,000 pieces per die. Using Granodraw-treated rod, one die produced 105,000 pieces—another 194,000 pieces. And both dies were in good condition at the end of the run.

**AMERICAN CHEMICAL PAINT COMPANY, Ambler 20, Pa.**

DETROIT, MICHIGAN

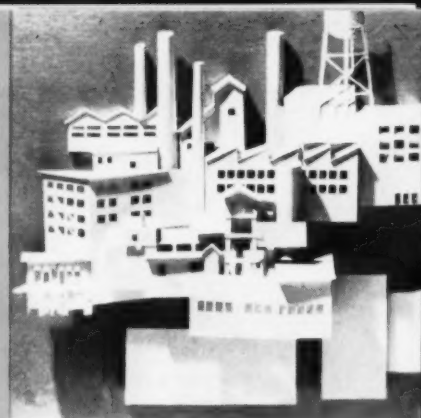
ST. JOSEPH, MISSOURI

NILES, CALIFORNIA

WINDSOR, ONTARIO







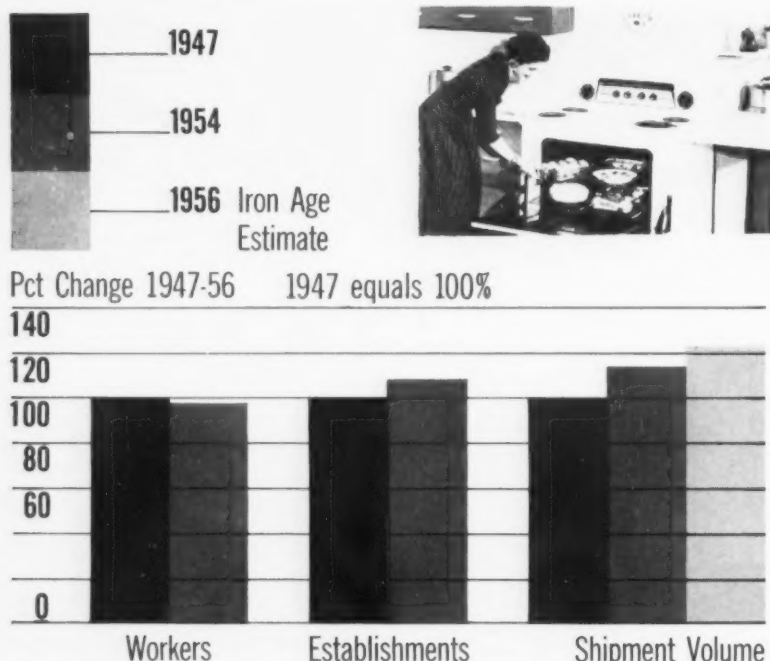
# Markets For Metalworking

Aircraft	220	Gears	260
Aircraft Engines	258	Industrial Trucks	228
Appliances	204	Instruments	230
Batteries	238	Locomotives	248
Cans	240	Machinery	208
Combustion Engines	236	Malleable Iron	256
Construction Equipment	246	Metal Foil	242
Controls	216	Motors	244
Conveyors	210	Oil Field Equipment	224
Drums and Pails	250	Paper Machinery	264
Enameling	218	Plumbing	262
Fasteners	222	Screw Machine Products	254
Foundries	214	Springs	232
Foundries, Steel	226	Textile Machinery	252
Furnaces	206	Tractors	234
		Welding	212

# **APPLIANCES: Easy Living Hits New High**

Unprecedented demand for electrical appliances has manufacturers producing at record pace . . . More companies are going in for a wider range of products . . . Looks like 1956 was another banner year.

## **Growth In Appliance Industry**



Pct Change 1947-56 1947 equals 100%

140

120

100

80

60

0

Workers

Establishments

Shipment Volume

Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

◆ THE HOUSE-HUNTING young couple were sold on the sample home. Included in the price were an electric range and an automatic washing machine. But the wife wanted an automatic drier and a new refrigerator to make her kitchen complete. Chances are, she got her way.

Multiply this family scene by thousands and you have part of the reason why shipments in the electrical appliance industry during 1956 reached an all-time high.

First returns from the 1954 Census of Manufactures point up the appliance industry as a major ground gainer in the years between 1947 and 1954, particularly small appliances. And the returns do not include radio and television production.

Estimates show 1955 was 14 pct better than 1954 and that shipments by the industry last year were likely to top 1955 by 6 pct. The Census suggests that home ap-

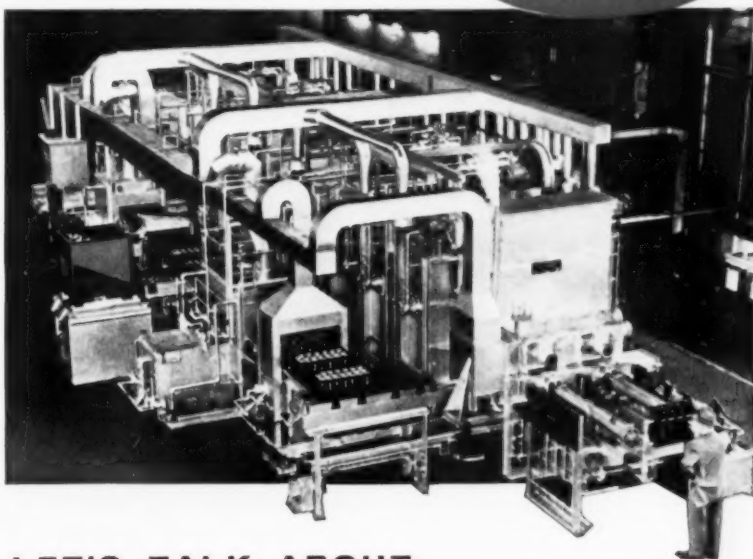
## **Electrical Appliance Industry—By Areas**

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours (1,000)	Wages (\$1,000)						
United States, total <sup>5</sup>	365	49,001	203,319	38,941	76,048	146,484	423,970	371,333	795,304	20,954	44,108	238,382
New England	30	8,063	31,165	5,980	11,864	21,073	64,878	36,554	101,433	2,811	8,561	43,146
Middle Atlantic	94	7,166	27,352	5,606	10,892	19,036	59,988	45,672	105,661	5,203	6,599	31,819
East North Central	129	26,856	117,063	21,809	42,207	86,939	231,644	230,015	461,060	11,207	21,289	123,592
West North Central	19	1,610	5,439	1,262	2,557	3,504	8,196	8,383	18,579	359	3,842	16,346
South Atlantic	24	873	2,880	668	1,276	1,952	8,286	7,104	15,370	(D)	(D)	(D)
East South Central	15	1,886	8,088	1,546	3,016	5,454	16,670	23,542	40,212	546	(D)	(D)
West South Central	8	75	214	61	102	137	401	830	1,222	(D)	40	(D)
Mountain	4	44	131	34	55	81	169	126	310	11	(D)	(D)
Pacific	42	2,406	10,965	1,970	4,674	8,302	33,734	19,104	52,838	1,053	3,068	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures

BLAZING THE HEAT TREAT TRAIL WITH

**HOLCROFT**



## LET'S TALK ABOUT HEAT TREAT STANDARDS

pliance manufacture has gone through some violent growing pains, not all of which are part of the dead past.

A staggering 68 pct gain in value of products shipped between 1947 and 1954 was accompanied by an influx into the industry of firms seeking diversification. The number of establishments increased from 389 in 1947 to 421 in 1954.

The number of persons employed by the industry in 1947 was 72,500. But in 1954 the total dropped to 71,100. This 2 pct decrease in employment came about despite the substantial gain in value of shipments. In 1947, shipments totaled \$906.5 million, while in 1954 it was \$1322.8 million. By the end of last year, shipments reached an estimated \$1627.0 million.

At least 10 pct more of the total value of shipments in 1954 were made by types of companies not included in the Department of Commerce "electrical appliances" classification.

The report reflects the growing demand by distributors that manufacturer supply not only ranges, water heaters, and other equipment in the original classification; but that he also supply refrigerators, freezers, home laundry equipment, and other appliances under the same brand name.

When the customer comes in, the distributor wants to offer him a complete houseful of appliances right up to and including air conditioning.

As it expands the number of appliance types sold under a single brand name, the industry is reducing employment and stepping up mechanization.

When you take a long look at today's heat treat standards, you'll find that many of them were originated or perfected by Holcroft and Company.

For example, back in 1922 the removable electric heating element was developed. As far back as 1934, Holcroft recognized the significance and importance of equilibrium constants and their value to controlled atmosphere heat treating. And in 1945, was initiated the use of refractories and ceramics in place of scarce and expensive nickel-chrome alloys in vital parts of the furnace. These are only three of many, many innovations which have become heat treat standards in the industry.

Pioneering in the past—forward thinking for the future . . . that's what you get when you invest in a Holcroft heat treat installation. And that investment is returned in the form of higher quality control standards and lower heat treat costs. Better investigate—today!

## HOLCROFT AND COMPANY



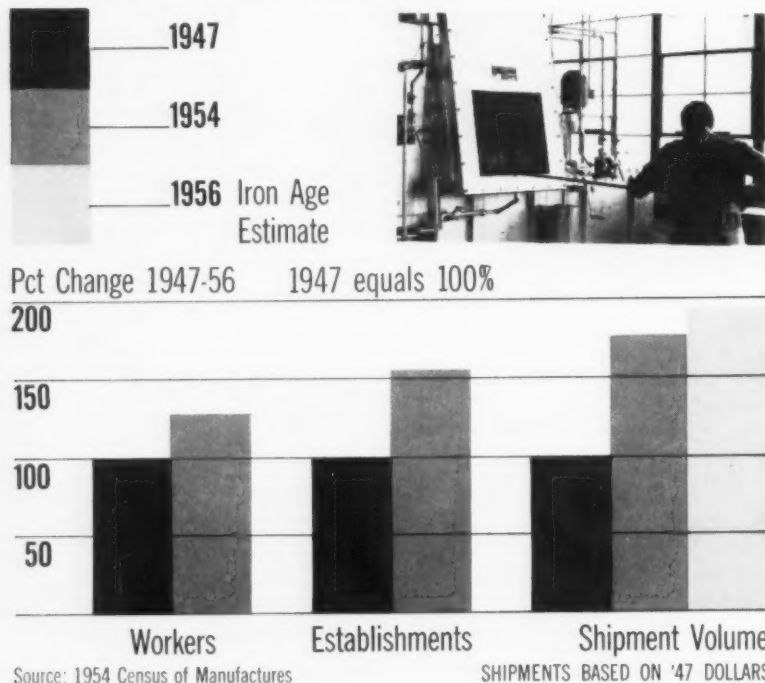
6545 EPWORTH BOULEVARD • DETROIT 10, MICHIGAN  
PRODUCTION HEAT TREAT FURNACES FOR EVERY PURPOSE

CHICAGO, ILL. • CLEVELAND, OHIO • HARTFORD, CONN. • HOUSTON, TEXAS • LOS ANGELES, CALIF. • PHILA., PA.  
CANADA: Walker Metal Products, Ltd., Windsor, Ontario

## FURNACES: Fewer Standards, More Sales

Trend toward custom-built industrial heating equipment means a record year for furnace makers . . . Appearance of natural gas in plentiful supply is changing designs . . . Automation reduces labor costs.

### Booming Years For Furnace Industry



♦ DEMAND for custom-built, automatic furnaces in metalworking plants led the way to a record \$180 million year in 1956 for the nation's industrial heating equipment industry.

More customers are asking for ovens and furnaces that will do in one operation what several used to do. Standard furnaces are accounting for a smaller percentage of sales. And fuel economy is taking a back seat to process needs.

Furnace makers are faring well because of the tremendous surge in capital spending begun in 1955 by most industries. Record shipments in 1956 compare to \$158.4 million in 1954 and \$75.4 million in 1947. Order backlogs amounting to over \$80 million assure furnace makers of many busy months to come.

The swing toward custom-built furnaces has had some effect on increasing employment in the industry. In 1954 there were 8,300 workers compared to 6,400 in 1947.

### Industrial Furnaces and Ovens Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			\$1,000		1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000		\$1,000
United States, total <sup>5</sup>	166	8,261	41,723	4,954	10,185	20,634	80,774	77,606	158,381	1,894	6,362	39,092
New England	15	395	1,743	261	539	920	3,362	2,239	5,603	(D)	322	(D)
Middle Atlantic	49	3,678	18,193	2,365	4,775	10,085	31,257	30,613	61,671	(D)	1,883	(D)
Pennsylvania	25	2,263	10,864	1,514	3,000	6,141	18,924	18,550	37,475	287	700	4,116
East North Central	69	3,604	19,412	1,912	4,028	8,293	42,785	40,099	82,885	652	(D)	(D)
Ohio	24	1,541	8,096	714	1,423	2,935	20,478	23,773	44,252	203	1,537	10,040
Illinois	20	1,184	6,488	582	1,279	2,484	11,122	8,698	19,821	238	1,041	6,863
West North Central	6	379	1,524	268	552	828	1,942	3,366	5,309	33	(D)	(D)
South and West	27	202	849	145	289	525	1,424	1,286	2,712	34	479	2,380

Footnotes, see p. 264. Source: 1954 Census of Manufactures



Adding to the employment total is a 54 pct increase in the number of companies during that period. There are 166 now. In 1947, there were 108.

Biggest forward steps in furnace design are toward faster heating, both for heat treating and hot-working. Metalworking companies are learning that metals can safely absorb heat at extremely high rates, so long as the heat is applied uniformly.

The one thing that has had the most influence on furnace design in the past 10 years is natural gas. A decade ago, natural gas was not available in most localities. Electricity was often the cheapest source of heat.

But since conversion of the Big-Little Inch pipelines to gas transmission after World War II, the fuel picture has changed. Gas offers more advantages for industrial purposes: ease of transportation and control, high heating value, and economy. Furnace builders are making the best of these advantages when designing new equipment. Now, gas and solid fuel furnaces account for about 80 pct of all industrial sales. Induction di-electric accounts for about 20 pct.

Faster, more uniform heating by convection—often with radiant gas units—is a major development in the last 10 years. Controlled atmospheres for scale elimination and carbon control in surface hardening are another.

New refractories reduce heat loss and permit easier maintenance. New core baking ovens offer cleaner working conditions, faster and more uniform drying.

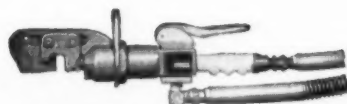
And automatic devices for handling fuel, stock and furnace repair, are doing much to reduce labor costs.

## NEW DESIGN

# MANCO Hydraulic Guillotine®

## WIRE AND ROD CUTTERS

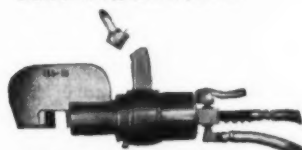
Big Capacity  
FAST · EASY TO USE



**MODEL MC 210** Capacity 1/2" High speed  
... 1/2 second per cut for steel rod to 1/2".  
Full swivel action.



**MODEL MC 35** Capacity 1"  
Cuts high carbon material including reinforcing rod and heat treated chain to 1" diameter in 1 1/4 seconds per cut.



**MODEL MC 65** Capacity 1 1/4"  
Cuts 1 1/4" diameter steel in 2 seconds per cut. Can be modified to cut 1 3/8" diameter aluminum.

### Big Time and Money Saver for Rod Mills and Users of Wire and Rod

*Ideal for production cutting, trimming off cobbled ends, taking test samples and splitting bundles on docks.*

Manco has completely redesigned the Guillotine line of wire and rod cutters now used by major rod mills throughout the world. These new Manco Guillotine units give high efficiency, heavy duty performance, with a 75% slash in tool maintenance costs.

### New Interchangeable Blade and Anvil

Interchangeable blade and anvil means wear points can be reversed for virtually double life. Three blade styles for various cutting requirements. There is a new simplified valve design with hardened and ground parts for longer life. Also, new Meehanite piston with large bearing surface and a new piston seal assembly that permits quick replacement.

These Guillotine units powered by Manco Hi-Thrust Electric Hydraulic Pumps

Write for Complete Information

### WRITE FOR CATALOG

**Important Note:** Also ask about trade-in offer on old model 200 HV-2L, 20 HV-1 and 21 HV-2L.

MANCO MFG. CO., Bradley, Illinois

Please send:

☐ Catalog of new Guillotine Wire and Rod Cutters.

☐ Trade-in information on Guillotine model(s).....

Name .....

Firm .....

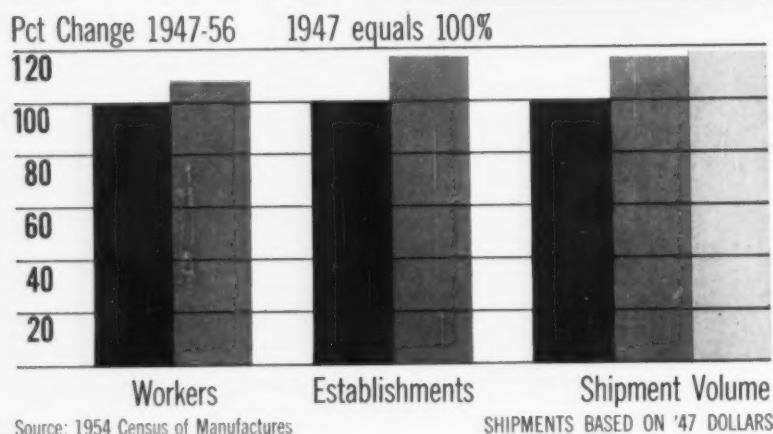
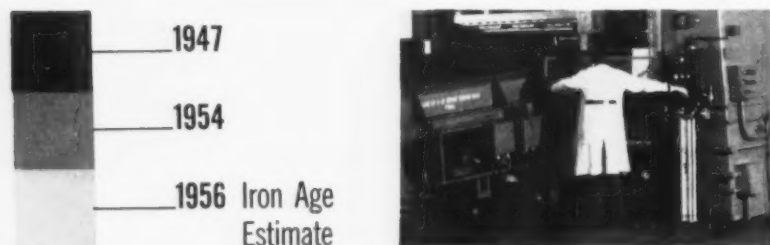
City ..... Zone ..... State .....

IA-1-A

# MACHINERY: A Delayed-Action Boom

Prosperity is catching up with metalworking machinery . . . Sales are high and backlogs are growing . . . Trend is toward big, more complex machines . . . Extrusion business up . . . Evolution in forging.

## Build-Up In Machinery Industry



♦ MAKERS OF metalworking machinery are riding a delayed-action boom. The prosperity that hit general industry in 1955 is just beginning to pay full dividends for producers of presses, rolling mills, shearing machines, hammers and other metalworking equipment.

Estimated sales of \$883 million in 1956 represented a gain of about \$45 million over 1954. The increase while not to be sneezed at did not tell the full story. In 1954 builders were living on old business. Sales were high but were starting to drop as backlogs declined. Today, sales are increasing and in most cases, so are new orders and backlogs.

United Engineering and Foundry Co. in Pittsburgh provides an example of how sales of metalworking machinery can lag behind current conditions. A major producer, United came out of 1954 with billings of \$58 million and a backlog of \$41.6 million.

## Metalworking Machinery Industry—By Areas

Region and State <sup>1</sup>	Establishments, number	1954								1947		
		All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
		(1,000)			(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)		
United States, total <sup>5</sup>	499	59,419	293,566	44,232	92,242	202,265	512,679	326,506	839,393	20,906	54,986	302,842
New England	53	3,334	17,145	2,554	5,626	11,491	29,321	15,063	44,385	2,156	3,827	19,343
Connecticut	27	2,106	10,931	1,620	3,561	7,750	19,018	9,827	28,645	967	2,276	11,318
Middle Atlantic	117	17,813	84,912	13,611	27,263	59,560	159,863	87,806	247,672	4,422	16,352	89,925
New York	53	5,465	25,378	3,867	7,715	16,416	48,212	27,574	75,787	1,806	5,568	24,553
New Jersey	26	3,489	16,850	2,261	4,579	9,740	24,077	11,212	36,189	1,613	4,444	20,281
Pennsylvania	39	6,856	42,683	7,482	15,034	33,403	86,673	49,020	135,695	1,203	8,340	45,111
East North Central	224	31,163	160,121	23,176	49,665	112,036	272,569	157,975	470,550	11,771	26,540	163,390
Ohio	74	16,188	82,003	12,467	26,441	60,163	143,697	101,195	245,093	6,940	14,293	77,739
Illinois	76	11,556	60,300	8,232	18,129	40,404	97,201	81,108	178,310	3,639	8,241	60,510
Michigan	43	2,156	11,192	1,498	3,196	7,250	19,226	8,897	26,125	776	2,564	16,628
West North Central	25	1,451	6,474	1,041	2,066	3,968	9,956	7,744	17,702	268	1,084	10,090
South	17	3,567	14,556	2,400	4,653	8,243	25,221	9,155	34,377	1,021	(D)	(D)
West	63	2,087	10,355	1,446	2,943	6,963	15,942	8,762	24,705	1,265	1,911	(D)
California	53	1,579	7,543	1,095	2,184	4,961	12,548	6,711	19,289	(D)	1,173	6,149

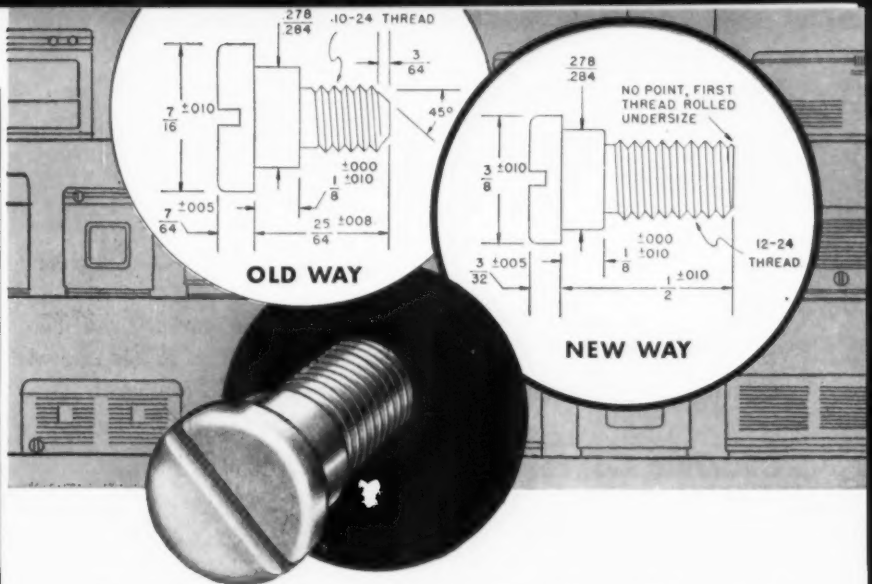
Footnotes, see p. 264. Source: 1954 Census of Manufactures

Despite capacity steel mill operations in 1955, United's billings dropped to \$48 million. However, the company's backlog rose to \$73 million during the same period. In 1956, United's first half billings were 24 pct over the same period in 1955 and its backlog climbed to \$117 million.

There is a trend toward bigger equipment. In the stamping field, this trend shows up in a growing number of transfer presses with 1000-ton capacities. Progressive die presses are showing steady growth. Automotive press design is tending toward big, self-contained units. Faced with the necessity of tearing down production lines at regular intervals, car-makers are asking for machines that have hydraulic and electrical systems inside.

In forging equipment, the trend has been away from hammers and toward presses. Shipments of forging hammers dropped from 588 in 1947 to 236 in 1954. Reasons include trouble getting skilled operators for hammers; and the expense of auxiliary equipment. The general market for forgings and forging equipment held up surprisingly well in 1956; the aircraft market for presses ranging up to 50,000 tons was very active.

In 1954, there were 53 extrusion presses sold. The majority of these were probably under 700 tons. Shipments in 1956 were up an estimated 50 pct over '54. Aluminum and aircraft manufacturers are stocking up on extrusion presses ranging from 8000 tons to 14,000 tons capacity. Also, there has been a mushrooming growth of independent aluminum extruders. Producing windows, furniture and similar home items, they use presses that run from 700 to 2000 tons.



## Townsend Design Service Reduced Cost of This Part from \$10 to \$5 per Thousand

The two parts shown above demonstrate how Townsend engineers saved an appliance manufacturer \$5.00 per thousand by redesigning a special fastener so that it could be produced by cold-forming. By redesigning this part a costly machining operation was eliminated.

The shouldered screw at left, above, an integral part of a major appliance, was originally produced by another method at a cost of about \$10.00 per thousand. Townsend engineers applied their extensive knowledge of cold-forming techniques to the problem and by slightly changing the design found that the part could be produced for about \$5.00 per thousand—a clear savings of 50% on a part used in great volume. The new part shown at right provides just as efficient a fastener as the old.

This is a typical example of how the Townsend Technical Sales Department can help you

in your efforts to improve your products and reduce assembly costs. These men can serve you in several ways—they will act as fastening consultants to your design and production engineers—they will design special parts or recommend the best standard fasteners. They often study an entire assembly procedure and suggest improved techniques.

The Technical Sales Department has back of it a company with nearly a century and a half of wire drawing and cold-forming experience. Townsend regularly produces more than 10,000 standard and special parts and fasteners—has the capacity to manufacture more than 60-million pieces a day.

To learn how you may use Townsend services to effect substantial savings in material costs, speed production and improve your products, write today for illustrated bulletins or use the coupon below.

The Fastening Authority

# Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry River Division • Santa Ana, California

In Canada: Parmenter & Bulloch Manufacturing Company, Ltd., Gananoque, Ontario

**TOWNSEND COMPANY**  
Post Office Box 237B  
New Brighton, Pa.

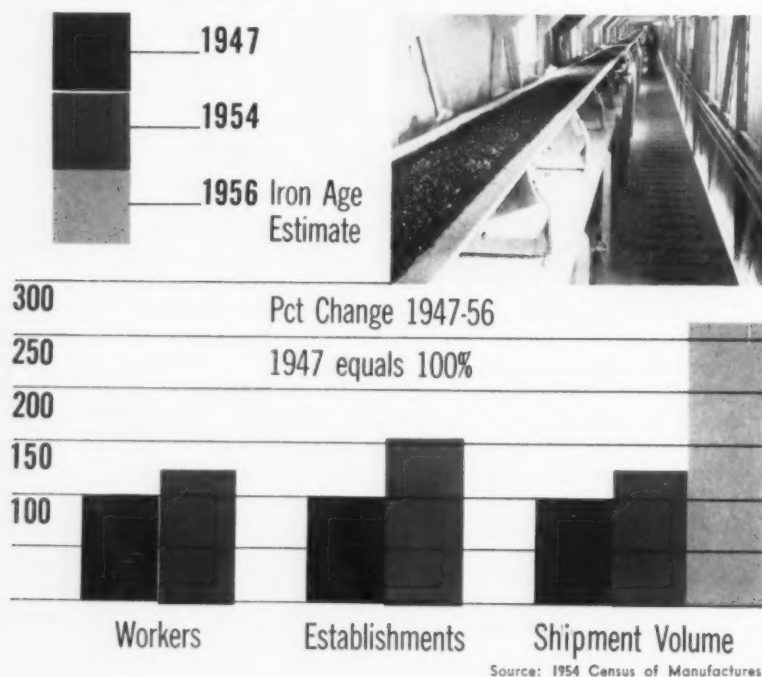
Please send Technical Sales  
Department Bulletins TL-89,  
TL-96 and TL-98.

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## CONVEYORS: Moving Into New Markets

Millions of dollars are lying around in untapped markets waiting to be scooped up . . . Producers have all they can do to keep up with current industrial demands . . . Capital expenditures are increasing.

### Charting Conveyor Industries' Growth



♦ A MOVING SIDEWALK capable of transporting 10,800 persons an hour through Hudson-Manhattan Terminal at Jersey City. Eight moving ramps that carry sports fans into Wrigley Field at Chicago. A proposed 103-mile conveyor across northern Ohio for hauling ore southbound and coal northbound.

These are forerunners of jobs that lie ahead for the nation's booming conveyor industry.

#### Markets Neglected

Even though 135 new manufacturers have sprouted up since 1947, the market potential is so extensive that many unexplored avenues are likely to remain untouched for some time.

Conveyor executives, whose hands are busy satisfying the needs of industrial customers, are eyeing with frustration the relatively virgin distribution market—especially terminal and wholesale warehouses. Material han-

### Conveyor Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	388	32,367	161,410	22,264	46,037	95,783	286,868	192,159	479,027	10,519	24,578	143,515
New England	19	427	1,938	322	659	1,306	3,011	2,049	5,060	90	268	1,287
Middle Atlantic	78	5,755	27,012	3,791	7,493	15,546	50,393	39,142	89,537	1,781	3,504	22,874
East North Central	161	19,161	100,785	13,351	28,022	60,425	180,021	107,907	287,929	6,533	16,528	98,199
West North Central	44	2,653	11,859	1,798	3,729	6,720	21,866	17,111	38,978	743	1,295	7,403
South Atlantic	11	313	1,216	215	443	711	2,079	2,576	4,655	99	D	D
East South Central	10	1,826	7,713	1,307	2,733	4,911	10,215	7,119	17,334	428	D	D
West South Central	18	517	2,064	352	718	1,127	3,648	2,657	6,306	161	D	D
West	47	1,711	8,820	1,121	2,235	5,032	15,633	13,592	29,225	721	824	5,637

Footnotes, see p. 264. Source: 1954 Census of Manufactures



dling, still done by manual labor in most warehouses, is ripe for conversion.

Another neglected field is the replacement market. Obsolete conveyors now operating in many older industrial plants are sorely in need of modernization to match efficiency of new machinery.

New capital expenditures in the conveyor industry, at a record \$10.5 million in 1954, are being stepped up to meet market potential. Sales in 1956 were estimated at \$1 billion. A comparison with previous years shows how the market has grown:

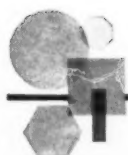
Value of shipments by the industry (including overhead cranes, hoists and monorails) totaled \$248.4 million in 1947, according to the 1954 U. S. Census of Manufacturers, just released. By 1954, the figure rose to \$479 million and last year it jumped to an estimated \$768 million.

Largely responsible for the phenomenal growth to date is the trend toward automation with its need for more and better material-handling devices. Since 1947, engineering hours within the industry have increased 50 pct in relation to shop hours.

Total employment increased 32 pct from 1947 to 1954, but only 23 pct were production workers, reflecting added engineer employment. The industry in 1954 provided work for 32,400.

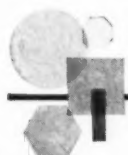
Improvements in components, such as 5-to-1 reduction in the size of electric motors, use of lighter and stronger metals, development of steel cord belting and better bearings, bring changes.

Two fields where conveyors are bound to expand soon are (1) the long haul for bulk materials, and (2) the short haul for passengers.



## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**1250 Marquette Street, Cleveland Ohio**



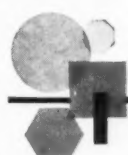
## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**1855 So. Kilbourn Avenue, Chicago Illinois**



## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**265 Pennsylvania Avenue, Millside New Jersey**



## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**12989 Greeley Avenue, Detroit Michigan**

### **7 WAREHOUSES AT YOUR SERVICE**

You'll get quick action on your order for alloy steel bars, billets or forgings . . . no matter what size, shape or heat treatment you require . . . when you call any one of our seven warehouses.

All seven are conveniently located in principal industrial areas.

Each is staffed by expert metallurgists, and is well-stocked to give you speedy service.

Fill your current needs by ordering our own HY-TEN steels, the "standard steels of tomorrow", or standard AISI or SAE grades.

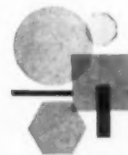
Or write today to our Cambridge office for your *free* Wheelock, Lovejoy Data Sheets. They contain complete technical information on grades, applications, physical properties, tests, heat treating, etc.

*In Canada: Sanderson - Newbould, Ltd., Montreal and Toronto*



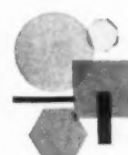
## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**144 Milton Street, Buffalo New York**



## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**4524 W. Mitchell Avenue, Cincinnati Ohio**



**HOME OFFICE:**

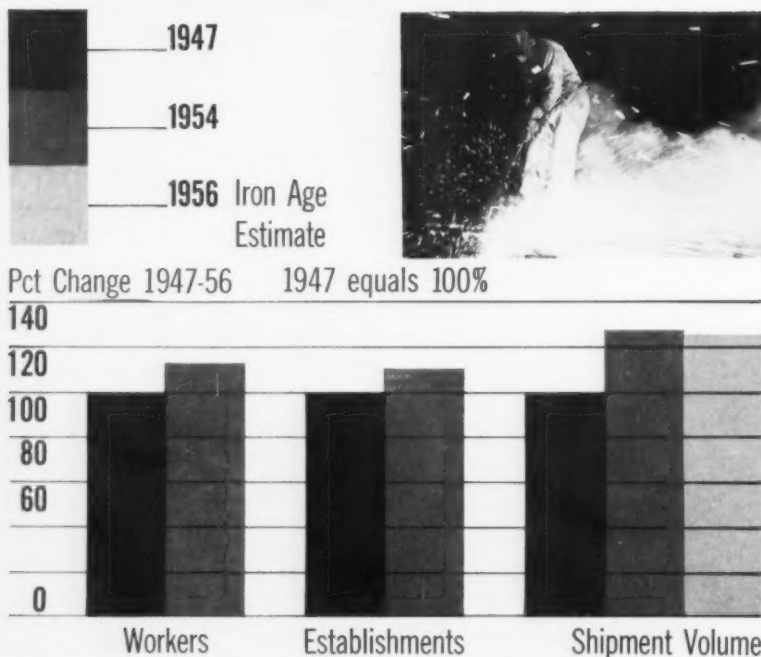
## **WHEELOCK, LOVEJOY & COMPANY, INC.**

**126 Sidney Street, Cambridge 39 Massachusetts**

## WELDING: A Bead On Record Sales

Growing popularity of high-speed welding equipment sets the pace for 1956 . . . Improved structural technique and stainless steel welding offer huge potential . . . Electrode technology is advancing.

### The Growing Welding Industry



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

◆ THE ACCENT in welding today is on faster and faster production methods with built-in controls making an easier job for the welder. Preliminary reports on the 1954 Census of Manufactures just issued confirm trends apparent earlier from welding manufacturers sales figures. And the end is not in sight.

The census indicated that shipments of electrodes in coils for automatic arc welding almost tripled between 1947 and 1954 from 7.4 to 21.2 million lbs, indicating the extent of the trend toward submerged arc and other automatic welding processes. And ever-increasing sales of iron powder coated electrodes, designed especially for high speed production welding and introduced fairly recently, show the trend is gaining momentum.

Higher deposition rates are also making headway in hard-surfacing through laying down metal

### Electric Welding Apparatus Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			\$1,000		(1,000)	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000		\$1,000
United States, total <sup>5</sup>	119	8,186	45,719	5,483	11,399	26,426	78,645	90,199	168,846	4,713	7,265	57,310
New England	4	138	801	87	165	355	1,345	652	1,997	109	362	1,366
Middle Atlantic	21	1,062	4,989	606	1,240	2,451	7,607	12,763	20,370	1,551	526	3,277
East North Central	63	5,685	34,267	3,879	8,181	20,435	59,714	63,058	122,772	1,611	5,343	45,531
Ohio	11	2,593	16,555	1,701	3,463	9,414	30,163	35,221	65,365	997	2,891	29,306
Michigan	31	1,763	11,215	1,313	3,002	7,496	18,319	15,328	33,648	337	1,268	9,782
West North Central	14	433	1,824	293	564	986	3,275	3,045	6,321	78	403	3,654
South and West	17	866	3,836	615	1,246	2,198	6,703	10,679	17,382	1,362	629	3,482

Footnotes, see p. 264. Source: 1954 Census of Manufactures

rather than using tool steel for wearing surfaces. Census figures indicate combined shipments in 1947 of low alloy high strength and stainless electrodes was less than low alloy high strength alone in 1954.

Shipments for 1947 for these products were 21.7 million lb compared to 37.6 million in 1954. This method of surfacing is coming into increasing vogue in road machinery, quarrying equipment, cement mills, engine crankshaft journals for steel rolling mills.

One factor not indicated in the preliminary report on welding equipment is the growth of the rectifier type welder. These were developed by several of the dozen or so basic equipment manufacturers to compete with existing motor-generators and transformers.

Their main advantage is in converting alternating current to direct current without moving parts. Earlier last year, double units were introduced which combine both the rectifier and transformer and offer ac or dc power at competitive prices.

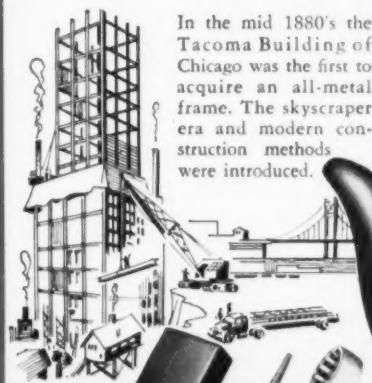
Sales of welding equipment and supplies in 1956 are estimated to be 10 pct ahead of 1955, or approximately \$192 million, according to IRON AGE estimates. Most builders feel the steel strike will not materially hold down future sales. Shipments in '47 were \$103.7 million, in '54, \$168.8 million.

Greatest technological potential for the next few years is building more and more automatic control into high speed production welding equipment. Industry leaders point out that since 86 pct of welding cost is in the labor factor, this presents the greatest opportunity for cost saving.

# WILLIAMS

## TOOLS OF INDUSTRY

**FOREMOST! SINCE...**  
the Construction Industry  
adopted the steel skeleton



In the mid 1880's the Tacoma Building of Chicago was the first to acquire an all-metal frame. The skyscraper era and modern construction methods were introduced.



**HOIST HOOKS**  
proof tested from 1/2 to 50 ton capacity

**CARBON WRENCHES**  
31 patterns, 561 sizes, openings from 3/8" to 7 1/2"

**ALLOY SUPERWRENCHES**  
30 patterns, 282 sizes, openings from 3/8" to 3 1/2"

**SUPER SOCKETS and ACCESSORIES**  
in five drive sizes, openings from 3/8" to 3 1/2"



Since 1882, Williams has anticipated the tool requirements of the construction industry... high capacity hooks to hoist girders and machinery... strong, efficient wrenches to bolt them tight.

Today, Williams makes the Broadest Line of Its Kind.

**NOTE:** You get quickest delivery at lowest cost from your local distributors.

**WRITE** for Catalog 302 showing the complete Williams line.

### J. H. WILLIAMS & CO.

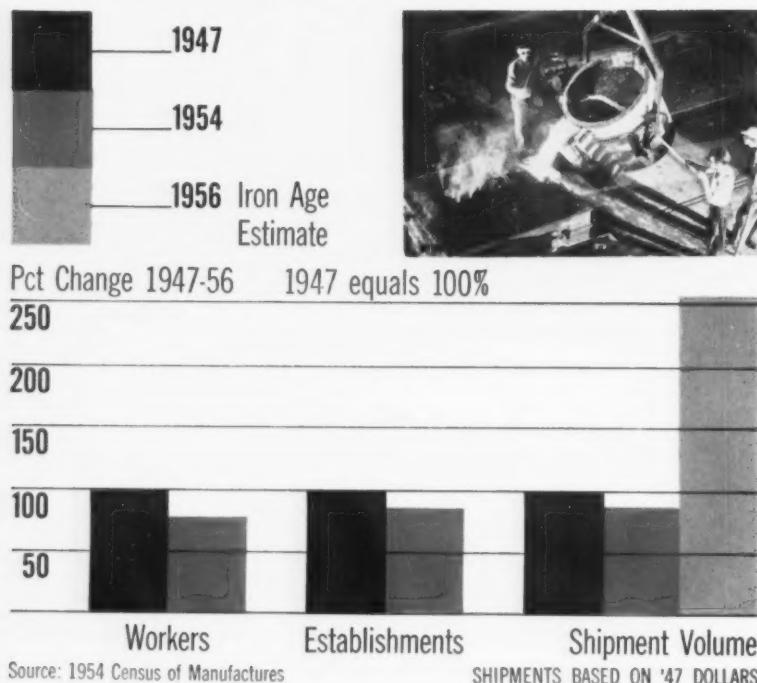
431 VULCAN STREET, BUFFALO, N. Y.

BUFFALO • NEW YORK • CHICAGO • LOS ANGELES

# FOUNDRIES: Molding a Bright Future

Sales of \$3 billion on an all-time record of 15 million tons estimated for '56 . . . Trend is toward faster, high production methods . . . New developments include CO<sub>2</sub> hardening and shell molding.

## Changing Picture For Foundries



◆ TARGET for gray iron foundries in 1956 was an all-time record of 15 million tons and association leaders think they might have made it. The present record is only a shade short — 14.9 million tons — in 1951. And in 1955 they came close at 14.8 million.

Estimated total sales for '56 are seen as \$3 billion if the production figure of 15 million tons is realized. Sales in 1955 for the approximately 2400 foundries were \$2.9 billion. Shipments in 1954 were worth \$1.4 billion, compared with \$1.2 billion in 1947.

A high degree of mechanization is indicated because production records are being set with fewer employees and fewer plants. Trend is highlighted in new statistics on the 1954 Census of Manufactures of the U. S. Dept. of Commerce. For the gray iron foundry industry this indicates that in 1947 there were 173,813 foundry workers who turned out products of

## Gray Iron Foundry Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	1,413	133,684	557,474	118,263	230,217	459,020	848,096	572,636	1,418,733	49,939	173,813	732,807
New England	119	8,282	24,511	5,655	11,112	20,358	36,520	15,968	52,489	1,530	9,056	39,146
Middle Atlantic	270	21,604	89,075	18,953	38,659	72,025	131,266	90,879	221,948	5,408	29,791	128,293
East North Central	499	67,250	301,083	58,738	114,212	246,151	444,482	297,193	741,676	29,979	89,413	378,201
West North Central	117	5,574	20,265	4,953	9,294	18,684	30,453	16,427	46,861	722	8,924	36,963
South Atlantic	115	5,790	19,471	5,108	10,287	16,394	31,385	22,099	53,485	2,291	8,991	(D)
East South Central	87	16,208	58,582	14,857	28,967	50,325	98,279	83,949	182,229	5,456	17,745	(D)
West South Central	59	3,685	12,571	3,318	6,792	10,732	22,542	13,708	36,251	1,083	2,802	(D)
Mountain	29	1,653	6,602	1,440	2,822	5,413	11,986	10,484	22,430	2,081	(D)	(D)
Pacific	118	5,863	25,331	8,158	10,096	20,532	39,168	22,143	61,341	1,366	7,875	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures



\$732 million in value added by manufacture. By 1951 the number of workers dropped 23 pct to 133,884 but they piled up \$846 million added manufacturing value, an increase of 15 pct. Number of foundries has also decreased 15 pct in the period from 1655 to 1947 to 1413 in 1954.

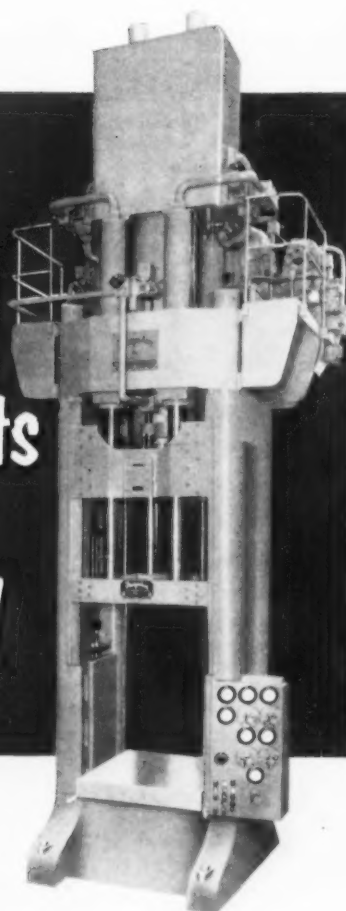
The answer is that the big foundries are getting bigger and the small ones are becoming more highly specialized or non-competitive. Thus the industry is working for continually faster, high production methods to keep selling prices per unit down.

The foundry industry today is buzzing with technical improvements. Biggest advance in the last year has been the CO<sub>2</sub> process for hardening cores and molds without drying ovens, thus increasing capacity without additional large size investment. Increased interest in shell molding is also raising the level of sand molds and use of nodular and pearlitic malleable iron in automotive crankshafts. And a real dark horse is a new alkaline earth haloid process recently introduced by Allis-Chalmers for lower cost production of nodular iron.

The Gray Iron Founders Society estimates that about 500 foundries in the U. S. are now using the CO<sub>2</sub> process compared to about 50 a year ago, most of whom were then just curious. The process is ideally suited to jobbing work although there are some problems which occur in cleaning cores and in removing them from the completed casting. It is also used for making dry sand molds.

Shell molding is becoming increasingly popular and also raising quality standards in conventional sand mold work.

## Farquhar Hydraulic Presses engineered for higher profits even on short runs!



THE whole Farquhar engineering-designing effort is directed toward making Farquhar Presses extremely efficient *even on short-run operations*. Farquhar's new triple-acting press with electric magnetic controls is typical of this designing plan. The electric controls of this press provide for fast, easy set-ups and fast, accurate cycle operation—two important advantages that guarantee higher production profits regardless of the size of the run.

We invite you to write for information or ask for our recommendations and proposals.

**A. B. FARQUHAR DIVISION**  
The Oliver Corporation  
Press and Special Machinery Department  
York 24, Pennsylvania

575-Ton Farquhar Triple-Acting Press with Electric Magnetic Controls. The first of its type with these controls. Advantages: unlimited speed changes—fast cycle time—no cams to adjust—smooth motion to protect expensive dies—4-point blank holder pressure adjustment. For complete facts write for Bulletin A-200.

### Special Machinery Built to Your Requirements...

Our staff works with the finest equipment to build your special machines economically. Your inquiry will receive prompt attention.

OLIVER

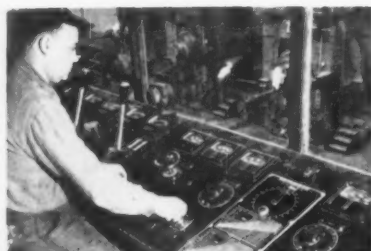
*Farquhar* PRESSES

Also Manufacturers of Farquhar Conveyors

# CONTROLS: Hitting the \$1 Billion Jackpot

Electrical control industry estimated to have registered over \$1 billion in sales in 1956 . . . This is second entrance into the select circle . . . Report much product development.

## Over The Billion Barrier



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

Source: 1954 Census of Manufactures.

Shipments in '47 dollars

♦ ELECTRICAL control industry has scored its second billion. Industry shipments entered the select billion dollar circle in 1954. They jumped an estimated 25 pct over that figure in 1956.

Official confirmation of the boom comes from the 1954 Census of Manufacturers. The report on the electrical control apparatus industry (S.I.C. Code 3616) shows that value of shipments roughly doubled between 1947 and 1954. The classification includes control devices used in the distribution as well as the end use of current.

Value of industry shipments increased from \$579.1 million in 1947 to approximately \$1.1 billion in 1954. It's estimated that shipments last year were about \$1,250 billion, although in terms of constant 1947 dollars this represents a slight decline from 1954.

Establishments increased from 321 in '47 to 451 in '54. Number of employees jumped from 67,500 to 79,300; production workers increased from 49,700 to 56,200.

## Electrical Control Apparatus Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	451	79,295	361,334	56,170	111,344	228,205	700,422	396,121	1,096,544	31,191	67,461	358,431
New England	45	7,117	28,954	4,795	9,482	17,653	48,559	31,436	79,995	(D)	5,208	25,528
Middle Atlantic	124	30,194	143,234	20,549	40,568	89,166	308,221	172,489	480,711	(D)	29,528	151,750
East North Central	146	30,475	140,733	22,104	43,358	90,155	256,666	124,317	380,985	14,695	25,533	140,687
West North Central	25	3,598	14,614	2,728	5,864	9,067	25,915	16,851	42,767	513	2,546	14,678
South Atlantic	20	1,831	6,404	1,381	2,798	4,023	10,680	9,839	20,519	4,024	(D)	(D)
East South Central	7	639	3,229	487	945	1,913	7,163	5,502	12,666	143	(D)	(D)
West South Central	15	745	3,209	516	1,102	1,959	5,725	5,618	11,343	289	(D)	(D)
Mountain	3	60	172	37	57	102	239	337	578	5	(D)	(D)
Pacific	66	4,634	20,783	3,568	7,166	14,143	37,248	29,728	86,977	1,151	(D)	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures

The Census report reveals impressive growth in the industry.

For example, shipments of electrical controls (not counting welding) increased from about \$7 million in 1947 to \$14 million in 1954. This is in line with the overall growth rate but just a foretaste of things to come.

Control producers say that electronic tubes were not rugged enough for many production jobs. They feel this problem has been licked through the development of transistors and magnetic amplifiers. They look for static control (no moving parts) to come into its own over the next 10 years.

In the whole field of industrial automation, gains have been impressive. Shipments of electrical control equipment (excluding railway, motor vehicle) came to over \$330 million in 1954 as against \$170 million in 1947.

#### Outside Automation

Materials handling controls, along with brake and mill controls, emerge as a new \$24 million category in the 1954 report. The increasing importance of control centers as a replacement for individual machine controls is indicated by their appearance as part of a new \$45 million classification.

But more than two-thirds of the control apparatus items fall outside the range of industrial automation. Nearly \$700 million of the 1954 shipments were accounted for by things like switches, circuit breakers, busways and relays.

Regarding geographical distribution, the Census shows that the electrical control industry is largely concentrated in New York, New Jersey, Pennsylvania, Ohio, Illinois, and Wisconsin.

## NEW FROM FOOTE BROS. *Vari-Mount* VARIABLE SPEED MOTORIZED DRIVE

VARIABLE  
ADJUSTMENT  
RANGES FROM  
2:1 to 6:1

STANDARD  
MOTOR

1 to 15 HP

Output RPM from  
712 to 2.5 Depending  
on Ratio and Speed  
Range Selected

VARI-MOUNT—the new Variable Speed Motorized Drive offers infinitely variable speed selection, greater flexibility of operation, wide adaptability, easier maintenance and the sound design you expect from Foote Bros.

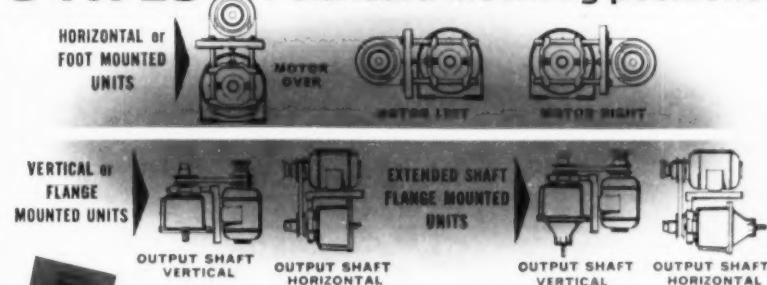
With a Vari-Mount, you can use your own motor—old or new NEMA Standard—or, the unit can be supplied with any standard motor of your choice. The Vari-Mount Reducer incorporates Duti-Rated Lifetime Gearing with file-hard tooth surfaces and tough, ductile cores for maximum life and efficiency.

Positive handwheel control of the adjustable pulley permits pin-point accuracy in speed selection over the entire range. Vari-Mount Units may be equipped with Remote or Automatic speed selection devices if required.

Spring loaded, self-centering Variable Pulley and close-coupled in line design insures permanent belt alignment, smoother performance, and minimum overhung load on motor bearing. No thrust load is imposed on motor bearings at any speed or during speed changes.

Quick belt changes made possible by the wide-open design of the Vari-Mount, together with easily accessible lubrication fittings make maintenance an easy matter.

### 3 TYPES 7 standard mounting positions



this trademark  
stands for the finest  
industrial gearing made

T. M. REG. U. S. PAT. OFF.

FOOTE BROS.  
Duti-Rated  
LIFETIME GEARING

# FOOTE BROS.

Better Power Transmission Through Better Gears

**FOOTE BROS. GEAR AND MACHINE CORPORATION**  
4565 SOUTH WESTERN BOULEVARD • CHICAGO 9, ILLINOIS

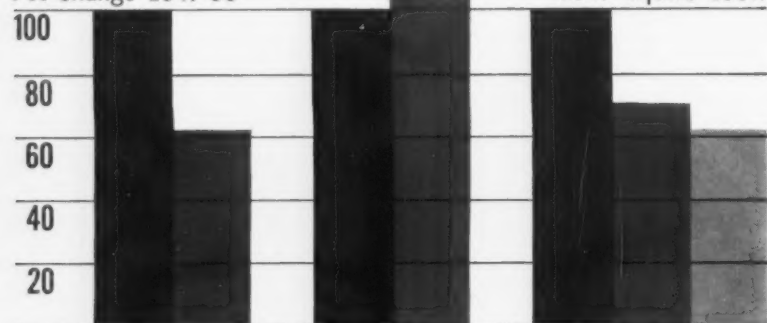
## ENAMELING: Gains Ground In New Fields

Vitreous enameled products industry has been running into stiff competition in some conventional lines . . . But market and product research is an offsetting . . . 1956 shipments considered good

### How It Looks for Enamelers



Pct Change 1947-56 1947 equals 100%



Workers

Establishments

Shipments Volume

Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ **FORCED FROM** the pantry shelf by aluminum and stainless steel cookware, the vitreous enameling industry is developing a huge new market in the field of architectural paneling.

This market, together with increased demand for porcelainized hot water tank liners, is revitalizing an industry that suffered a serious setback in 1954. For the immediate future, the picture looks bright.

### Captive Trend

With big appliances makers doing more of their own porcelainizing, the trend in the industry is toward more captive plants and fewer independent companies. However, the 50-odd independent companies now operating are getting their share of a revived market that is approaching the \$500 million mark in annual shipments.

They get most of their orders for such things as home appliance parts, architectural items,

### Vitreous Enameled Products Industry—By Areas

Region and State <sup>1</sup>	1954										*1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	50	7,157	24,856	5,937	10,850	18,853	35,572	28,234	63,808	1,208	11,560	42,338
Northeast	27	2,523	8,409	2,119	3,948	6,371	11,701	9,118	20,897	419	3,186	12,635
Pennsylvania	8	1,697	6,013	1,615	2,887	4,737	8,311	6,600	14,912	318	2,482	9,837
East North Central	12	2,754	10,565	2,213	3,921	7,947	14,271	11,795	26,066	286	5,821	20,749
Ohio	7	2,130	8,016	1,652	2,865	5,903	11,068	9,700	20,788	193	4,609	14,842
South and West	11	1,879	5,881	1,603	2,980	4,533	9,519	7,322	16,844	500	2,553	8,984

Footnotes, see p. 264. Source: 1954 Census of Manufactures



plumbing fixtures, and tank liners—plus utensil work. The Census of Manufactures shows the industry shipped \$76.3 million worth of products in 1947. In 1954, shipments dropped to \$66.2 million.

Fortunately, demand for hot water tank liners and architectural castings came from behind to bolster the sagging sales curve and in 1955 the industry regained lost ground.

During the period 1947-54, which saw a number of independents absorbed by large appliance makers, companies increased from 47 to 50. But in the same period, number of workers dropped from 11,600 to 7,200.

#### Color Plus Durability

While metallurgy is changing the picture in housewives' cooking habits, porcelain enamel research is altering the artistic preferences of architects and the design preferences of heating engineers.

Porcelainized metal curtain-wall panels used in exterior building construction are easy to fabricate, they are durable and put all the colors of the rainbow at the architect's disposal.

Small appliance makers are going in for colored porcelain enameling. At least two major manufacturers are coming out with colored porcelainized toasters.

Hot water tank producers now are turning out 70 pct of their tanks with "glass," or porcelainized, liners. Durability is the advantage here.

Major technical advances made by the industry since 1947 include low temperature firing, thinner coatings, new base metals, better chemical resistance.

The industry is now able to porcelainize materials at 1350°F or less—thus opening new markets.

*it's only part  
of the HTM\* story...*

## FATIGUE RESISTANCE



\*Hi-Tensile (Heat-Treated) Malleable

\*\*HTM-228 metal, liquid quenched,  
x2000, etched



Perhaps your product takes a severe beating—like rocker arms, for instance. Then you're interested in fatigue resistance under elevated temperatures. And that's where HTM castings really score.

But HTM castings don't stop there. Other major advantages of HTM metal are high fluidity that casts easily into complicated shapes . . . high ultimate strength . . . excellent non-seizing properties . . . *machinability index* of 80-90 (B1112 steel=100).

Look into the advantages of HTM metal. It can improve the service performance—and *sales performance*—of your product.

AA-3099

**NATIONAL MALLEABLE CASTINGS COMPANY**

Established 1868

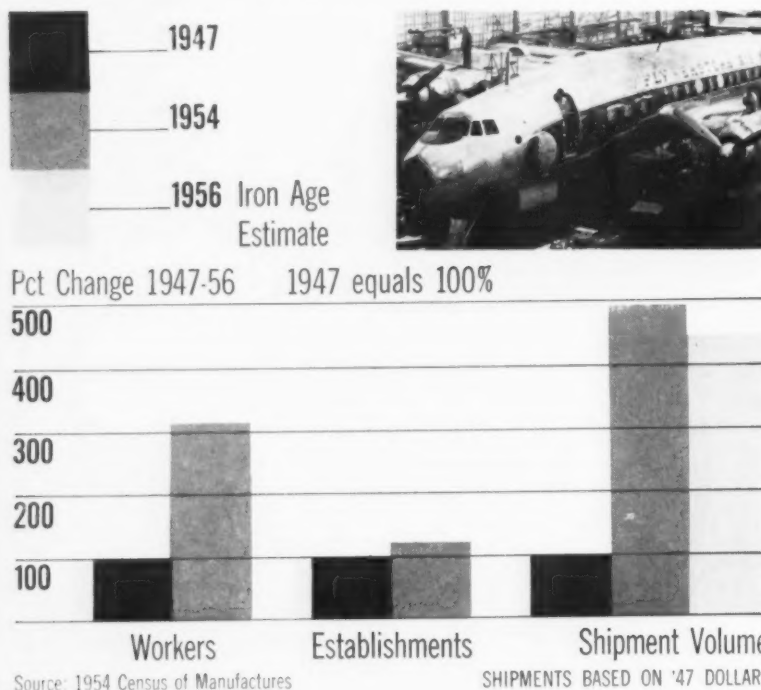
Cleveland 6, Ohio

The nation's largest independent producer of malleable and pearlitic malleable

## AIRCRAFT: Sales Gaining Altitude

Commercial jet transport contracts are coming in fast . . . But the big money is in military orders . . . \$9 billion a year in defense contracts is expected by 1960 . . . Guided missiles growing in importance.

### Air Age Makes New Business



♦ **MILITARY SPENDING** will continue to be the difference between feast and famine in the aircraft industry.

Since before World War II, planemakers have relied heavily on government contracts for revenue. And despite a current boom in commercial jet transport orders, military work is still the main source of income for most producers.

Pentagon planning calls for the most powerful and up-to-date air force in the world. Spending will hit \$9 billion per year by 1960, \$12 billion by 1965 and \$14 billion by 1970.

A shift to guided missile use means production tooling in the industry will undergo many changes in years to come. These weapons are now adjuncts to manned aircraft. But the day isn't too far off when the nation's striking power will rely almost 100 pct on missiles, say some experts.

In the field of commercial trans-

### Aircraft Industry—By Areas

Region and State <sup>1</sup>	Establishments, number	1954									1947	
		All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of Work Done <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		
			\$1,000		1,000	\$1,000						\$1,000
United States, total <sup>5</sup>	72	457,618	2,277,319	320,445	654,781	1,441,632	3,448,876	2,918,271	6,367,147	59,445	146,625	605,983
New England	4	6,083	28,711	3,786	7,765	16,140	42,316	30,850	73,166	(D)	8,193	(D)
Middle Atlantic	14	56,546	305,763	40,684	85,240	200,168	483,795	367,275	851,070	(D)	(D)	(D)
New York	10	51,004	278,736	36,998	77,665	184,867	440,796	325,983	766,779	5,240	13,968	55,536
North Central	9	74,170	348,561	52,748	110,712	238,572	530,987	671,350	1,202,337	2,315	12,923	59,365
Kansas	5	44,996	209,209	32,829	69,927	152,128	296,659	550,957	847,616	872	(D)	(D)
South	16	100,556	480,608	73,692	144,060	317,558	654,455	565,118	1,219,573	17,010	29,489	114,698
Maryland	4	27,016	125,598	19,996	38,864	83,871	195,529	155,303	350,832	(D)	16,184	(D)
Texas	7	41,148	204,147	30,279	59,003	136,907	255,303	134,609	389,912	6,585	12,944	(D)
West	29	220,260	1,113,674	149,532	307,090	669,174	1,737,320	1,263,675	3,020,995	34,212	80,006	341,474

Footnotes, see p. 264. Source: 1954 Census of Manufactures

port, since 1955 planemakers have obtained orders for 600 jets and turboprops worth over \$2 billion. This work will keep the plants humming through 1960.

On top of this, there's another \$7.5 billion in commercial orders in the cards for the next 15 years.

When aircraft buying is traced back into supplier industries, it proves to be a big customer for metalworking. The industry eats up 20 pct of the nation's annual aluminum production; 1/2-million tons of steel alloys, carbon steel, copper and copper base alloys. It is a huge market for machine tools, equipment and services.

Today the aircraft industry has a \$17.2 billion backlog, only 9 pct under the 1953 post-World War II peak of \$18.9 billion.

Outlook: Work will stay at top speed in 1957, and probably for many years beyond. Sales in 1957 should reach \$8.5 billion, up slightly from the \$8.3 billion in 1956.

Value added by manufacture jumped from \$1.2 billion in 1947 to \$8.3 billion in 1954, according to the 1954 Census of Manufactures. In 1956, value added is estimated at \$5 billion.

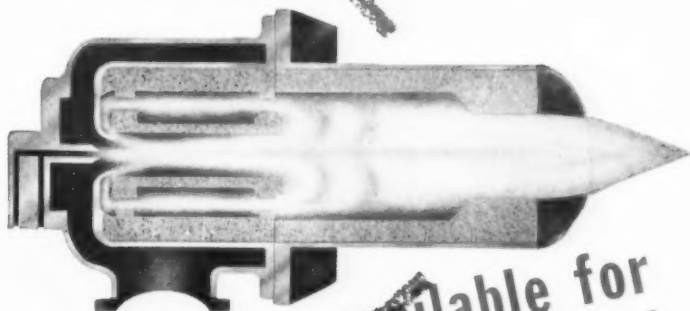
However, it should be noted that 1947 was the post-World War II low point in airframe weight produced—29 million lb. In 1956 the total was 125 million lb and should hold at that figure through 1957.

Between 1947 and 1954, employment climbed from 146,600 to 475,600—an increase of 212 pct. The number of companies increased from 58 to 72.

Aeronautical engineers are at work on planes that will fly at speeds beyond 3000 mph. Tomorrow's planes will require new materials, machine tools, processes, and equipment.

# high velocity burners by

# THERMAL



**NOW... available for residual oil!**

■ By proper utilization of the THERMAL burner characteristics of high velocity, high temperature, non-luminous flame, remarkable results have been obtained in furnaces, kilns, ovens and heat exchange equipment of all types. Let us analyze the effects possible in your facilities or describe the specialized heat equipment designed and built by THERMAL. Write for Bulletin No. 108.

Thermal Products & Services



Gas, Oil & Combination Burners •  
Heat Exchangers • Air Heaters •  
Submerged Combustion • Combustion & Heat Transfer Equipment

# THERMAL

**Thermal Research & Engineering Corp.**

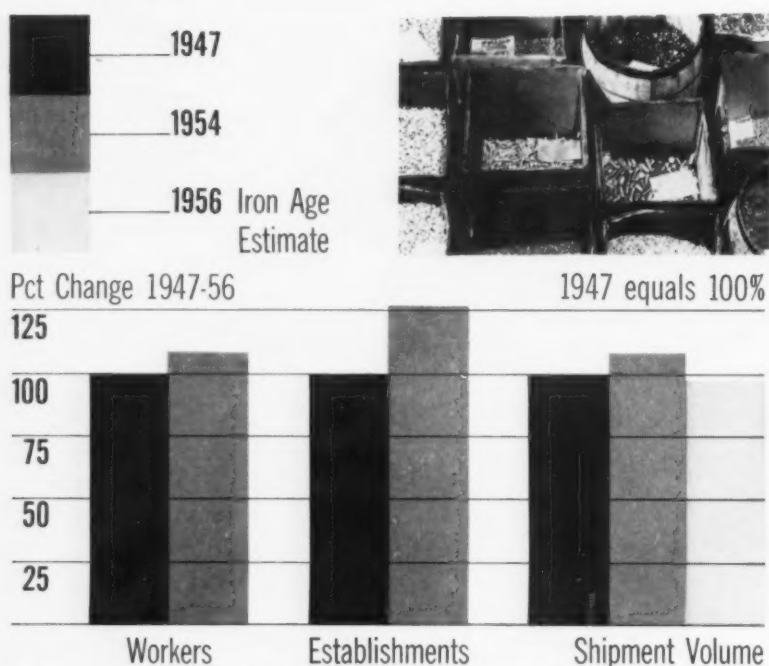
CONSHOHOCKEN • PENNSYLVANIA

REPRESENTATIVES IN PRINCIPAL CITIES

## FASTENERS: Two Big Years In A Row

Another year as good as 1956 is firming up for the fasteners industry . . . Autos, construction, railroads ring cash register . . . Rivets and high-strength bolts compete in construction.

### Rapid Expansion In Fasteners



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ FEW METALWORKING industries exceeded the 51 pct jump in value of shipments shown by fasteners between 1947 and 1954—and still the industry continues to grow.

Preliminary reports of the 1954 census of manufactures indicate sales within the industry of \$699.5 million in 1954 compared with \$463.8 million in 1947. Projected on this basis, sales for 1955 totaled about \$723 million and for 1956 about \$724 million. Shipments by all producers in 1947 were \$483.4 million and in 1954 were \$704 million.

For 1956 the industry expected about a 6 pct increase over 1955 despite the blow which fastener-making subsidiaries of steel producers took during the five-week steel strike. Beside the loss in actual production, many short-term delivery orders were placed with other firms. The loss was still being felt at year's end with inde-

### Bolts, Nuts, Washers and Rivets Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	457	53,729	246,235	42,309	86,427	173,019	411,662	287,662	699,523	26,090	49,235	285,451
New England . .	68	9,918	41,817	7,872	16,651	30,309	68,490	36,774	105,264	2,949	11,157	52,583
Middle Atlantic	90	12,131	55,255	9,043	17,958	36,005	87,123	58,819	145,943	6,477	11,105	60,738
East North Central	220	27,483	131,150	22,108	44,976	94,082	220,348	165,023	385,369	13,995	24,368	159,169
West North Central	7	466	1,897	368	690	1,227	3,209	1,837	5,047	101	526	2,317
South Atlantic	6	668	2,157	554	1,139	1,724	5,020	4,056	9,077	640	(D)	(D)
East South Central	6	661	2,643	566	1,072	2,039	6,483	4,563	11,066	(D)	749	(D)
West South Central	7	125	500	97	209	334	1,143	925	2,068	(D)	(D)	(D)
West . . . . .	53	2,255	10,815	1,701	3,528	7,297	19,843	15,844	35,687	1,426	843	5,007

Footnotes, see p. 264. Source: 1954 Census of Manufactures



pendent producers generally working at a higher rate than steel company subsidiaries.

Some of the larger independents see about a 10 pct increase in 1957 over 1956. This is predicated on four main factors: higher automobile production, no let-up in industrial construction, continued heavy railroad car building and some improvement in farm implement construction. Some specialties like mine roof bolts and oil and gas machinery fasteners also promise to stay at high levels during 1957. Automotive markets generally take about a quarter of the fasteners, the largest single market.

Closest thing to a skirmish in the fastener field is the continued running contest between high strength bolts and rivets in construction.

While rivet manufacturers acknowledge gains made by high strength bolts in field construction, they attribute it to the shortage of skilled construction workers. On fabrication in shops, they feel they are holding their own but there they have to fight off the welders. Biggest recent wind-fall for rivetmakers has been continued freight car building.

High strength bolt manufacturers claim their output has doubled in the last year for its single greatest spurt since introduction about 5-7 years ago. Facilities for producing them are booked to capacity and must be sandwiched in with conventional production.

A major shift in markets is taking place in aircraft fasteners. Specialty producers are getting a good percentage of high-cost, high-labor factor aircraft fasteners, some costing \$20 each.



## Your Engineer is Right!

**Investment Casting** permits new approaches to design and production engineering, unbound by the restrictions of traditional metallurgical practices and manufacturing techniques.

**Major economies** are obtained when your products or components are designed . . . or redesigned . . . with tolerance, surface and inspection criteria to conform with casting techniques. The resultant savings in final cost and production time, more than repay this small investment.

Your design engineer deserves and requires the great flexibility and latitude in design and production planning offered by Investment Casting. If application requirements demand that a part be of complex shape, intricate contours in a material that's difficult to form or machine, in short or long run quantities, Investment Casting may provide the economical answer.

### CASE IN POINT!

#### Freedom of Design

The rudder over-balance eliminator used on the jet bomber is an investment casting of specification QQ-M-55 Magnesium, Alloy AZ-92. This intricate design is more economically produced by investment casting than any other process, permitting design freedom and assuring quality performance.



# ARWOOD

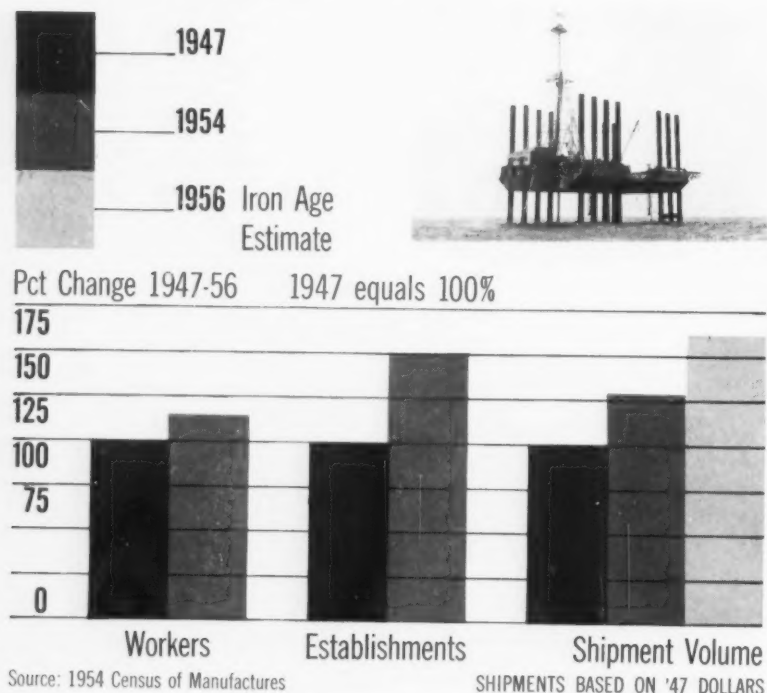
**ARWOOD PRECISION CASTING CORPORATION**

327A West 44th St., New York 36, N. Y.

# OILFIELD EQUIPMENT: Rigs To Riches

Offshore drilling and secondary recovery operations are shaping trends in oilfield machinery and tools . . . Since 1954 it's been a buyers market, but industry growth is marked . . . Competition healthy.

## Banner Year In Oil Fields



♦ SITTING on a strong but volatile market, makers of oilfield machinery and tools look for another banner year.

First half figures indicated a 25 pct jump in 1956 shipments of drilling rigs, sucker rods and other devices for tapping oil supplies. Value of shipments by the end of the year might well have gone over the billion mark.

Backing this prosperity is the climbing demand for oil. Domestic demand is averaging 8.9 million bbl a day; should hit 10 million bbl next year. To meet this need, oil men will drill about 58,000 wells this year, or 13,500 more than in 1951 and probably 20,000 less than in 1965.

More than 400 companies are supplying the equipment needed for this activity, compared to 345 in 1945 and 230 in 1947. Among the largest are the oilfield supply divisions of major steel mills.

Whenever a new well is drilled, new casing and tubing must be

## Oil Field Machinery and Tools Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	345	33,686	161,601	24,143	48,576	102,320	318,737	194,645	513,383	18,188	29,177	171,265
Northeast . . . . .	14	1,989	7,955	1,571	2,750	5,853	10,205	10,779	29,933	688	2,247	8,786
Pennsylvania . . . . .	12	1,950	7,799	1,543	2,694	5,543	9,785	10,396	20,161	688	(D)	(D)
East North Central . . . . .	21	2,255	10,599	1,701	3,486	7,800	15,534	13,232	28,787	531	2,294	9,246
Ohio . . . . .	10	1,601	8,641	1,378	2,797	6,210	12,157	10,360	22,518	295	2,224	8,905
West North Central . . . . .	13	1,053	4,591	782	1,514	2,791	9,972	7,049	17,022	249	1,330	7,746
South . . . . .	227	22,561	108,621	18,169	33,780	69,278	230,900	135,265	366,166	14,602	17,966	108,451
Oklahoma . . . . .	88	5,656	25,205	3,876	7,734	15,057	39,150	39,626	78,977	1,203	3,554	(D)
Texas . . . . .	145	15,959	79,606	11,499	24,364	51,362	188,232	88,801	274,034	13,201	13,446	78,419
Mountain . . . . .	6	469	2,311	262	623	1,121	4,294	4,875	8,909	32	(D)	(D)
Pacific . . . . .	62	6,356	27,623	3,635	7,460	15,974	47,890	23,644	71,534	2,102	(D)	(D)
California . . . . .	62	6,356	27,623	3,635	7,460	15,974	47,890	23,644	71,534	2,102	8,305	38,770

Footnotes, see p. 264. Source: 1954 Census of Manufactures

ordered. Once used, these products are rarely, if ever, recovered. It is a big factor in the shortage now being experienced in oilfield goods.

But the situation in oil country equipment is different. Most equipment items can be reused. The demand for these items is less rigidly pegged to oilfield activity. Equipment sales rose less than 1 pct in 1954 despite a 10 pct jump in well drilling.

Offshore drilling is calling for equipment designed to operate on platforms 100 ft above the sea floor.

The trend toward deeper drilling has played a part in the swing toward rotary equipment and away from cable tool drill units.

Average well depth (about 4000 ft) has increased only 500 ft since 1947 and actually declined a few feet last year. But more important than depth is drilling speed. The high cost of drilling, the need to get at oil before leases expire and the competition with nearby wells have all brought a demand for high speed drilling equipment.

Problems of the equipment maker are many. The current shortage of tubular products will cut into his market by reducing the number of wells drilled this year by 1000.

Equipment makers increased their use of nickel bearing stainless by 200 pct in 1955: they could well be hit by the nickel pinch.

But the biggest problem is gagging the twists of a special market. When the rest of the economy slumped in 1954, oil field activity spurted.

Equipment makers must stay on top of other market quirks. At the end of 1955, there were a record 3300 drilling rigs in operation.

tells how you can save time and money with

## Chobert Automatic Riveting!



MOTOROLA TV—  
cabinet assembly



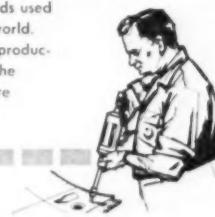
HOTPOINT—  
name plate attachment



NORTH AMERICAN  
AVIATION, INC.—  
specialized application

Latest brochure tells how the Chobert High-Speed Automatic Riveting System works—shows typical blind and open applications where Chobert Automatic Riveting can save you time and money—all clearly illustrated and described. Types of rivets and their basic characteristics plus diagrams are included.

Photographs showing Chobert, "the industry-approved high speed fastening system" in applications covering a wide variety of Aviation, Transportation, Appliance, Architectural and other industrial and commercial uses will help you create new, efficient production shortcuts! Records show Chobert Automatic Riveting does the job faster, better and for less money than previous methods used by many major firms all over the world. Investigate the Chobert way to cut production costs—get your FREE copy of the Chobert Automatic Riveting brochure by sending coupon—TODAY!



HERE's the coupon—  
Please send your FREE  
Brochure about Chobert  
Automatic Riveting  
right away!

### AVIATION DEVELOPMENTS INC.

210 SOUTH VICTORY BOULEVARD • BURBANK, CALIFORNIA

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_ COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_  
PRESENT PRODUCTS \_\_\_\_\_

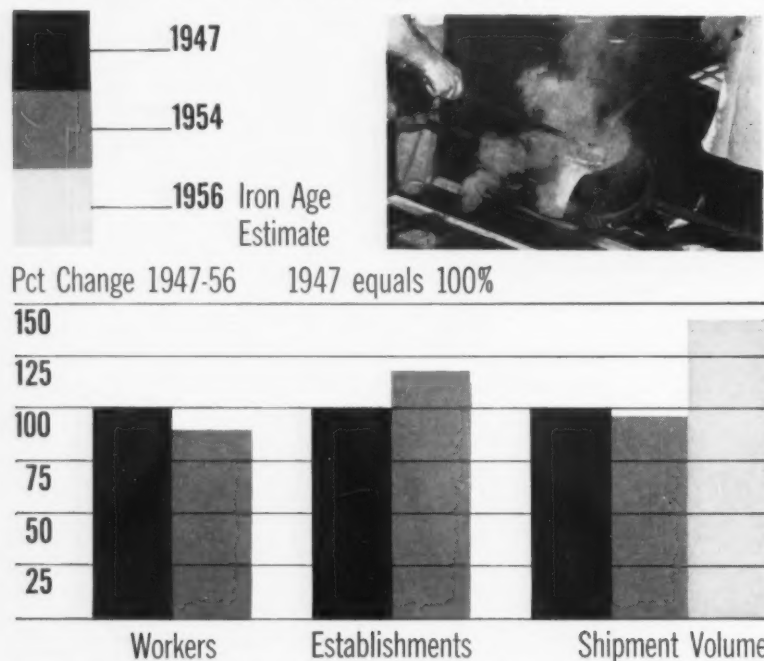
SEND REPRESENTATIVE ☐ SEND BROCHURE ONLY ☐

Chobert—Patented—Reg. U. S. Pat. Off.

# STEEL FOUNDRIES: RR Cars Pace Market

High volume of freight car building program last year steered steel foundries to best peacetime year . . . Continuing activity through first half of '57 expected . . . New techniques gain importance.

## A Decade of Steel Foundry Growth



♦ WITH THE AID of a healthy shove from the railroad freight car building program, steel foundries had their best peace time year in 1956. The surge which hit its stride last year boosted the percentage of output going to the railroad industry from about 20 pct in '54 to about 40 pct in '56.

A 50 ton freight car uses about 7 tons of steel casting, a passenger car up to 10 tons and a locomotive up to 15 tons. These castings are principally in frames, side frames, bolsters, knuckles and couplers. High volume of rail car building promises to continue at least through the first half of 1957 with well over 100,000 cars still to be built.

New methods of materials handling, molding, coremaking and processing are consistently increasing quality and production.

Advance report of the 1954 Census of Manufacturers shows that 1954 was already 34 pct ahead of 1947 in value of shipments with

## Steel Foundry Industry—By Areas

Region and State <sup>1</sup>	Establishments, number	1954									1947	
		All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
United States, total <sup>5</sup>	241	55,824	245,058	46,289	66,960	181,929	361,604	179,900	541,505	16,530	62,335	262,935
New England	7	989	4,237	810	1,635	3,158	6,194	2,769	8,964	275	883	4,018
Middle Atlantic	65	18,436	81,043	14,927	27,429	58,307	120,412	65,733	186,145	4,554	23,196	92,928
Pennsylvania	41	13,876	60,021	11,419	20,478	43,521	88,117	47,283	135,400	3,505	17,800	72,795
East North Central	84	23,887	107,217	19,572	36,425	78,420	158,994	73,643	232,638	6,796	27,938	125,698
Ohio	25	6,648	29,474	5,488	10,151	21,174	41,788	18,272	60,061	2,020	9,539	41,592
Indiana	6	3,723	17,809	3,198	6,367	14,402	25,969	13,564	39,533	1,179	3,491	12,910
Illinois	22	7,180	31,739	5,569	9,657	21,285	46,869	18,491	65,361	1,875	9,637	45,423
Michigan	16	2,471	10,046	2,179	4,126	8,358	17,813	10,328	28,141	669	2,912	12,345
Wisconsin	15	3,864	18,149	3,135	6,122	13,199	26,554	12,986	39,540	1,132	2,359	13,428
West North Central	13	3,138	13,329	2,744	5,339	10,613	18,367	10,293	28,661	595	3,243	12,567
South and West	72	9,370	39,229	8,233	16,128	31,428	57,629	27,461	85,095	4,307	7,075	27,724

Footnotes, see p. 264. Source: 1954 Census of Manufactures



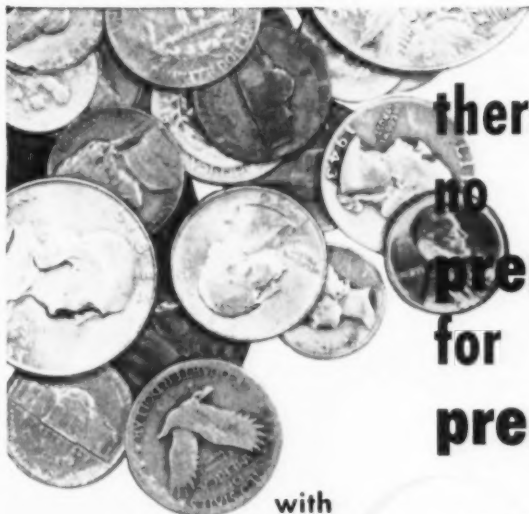
\$542 million worth turned out. From the steel founders viewpoint 1954 was a poor year, in fact the lowest in tonnage production since 1940.

The government survey also indicates a downturn of 10 pct in employment between '47 and '54 which has been reversed since then. Figures for the Steel Founders Society show employment of 45,200 in 1947, a decline to 29,800 in 1954 and a comeback to 39,200 for 1956.

Most of the heavier mechanization in steel foundries is aimed at giving the aching backs of foundry workers a lift. Materials handling equipment, sand conveyors, palletizing, fast shakeouts and improved molding facilities are all making steel foundries better places to work. Mechanization in the general commercial castings field is advancing year by year as shown by heavy investment in new equipment.

Most talked about technical advances in the steel foundry industry are core blowing, shell molding and the CO<sub>2</sub> process for core drying without additional investment in drying ovens. Core blowing, introduced in this country about 5 years ago, involves blowing sand under pneumatic pressure into a core box from a hopper. This practice is growing widely. Cores in the 200-300 lb. range are being made this way. Another new development being looked into is core shooting. Sand is put into conventional coreboxes under pressure, something like extrusion.

Steel foundries are doing some pioneering work in high temperature pouring in shell molds. Stainless is being poured regularly at about 2800° F and other steels at 2900° and 3000° near the breaking point of the binder.



there's  
no  
premium  
for  
precision

with

*"Fischer Turned"*

BRASS AND ALUMINUM NUTS

Costing no more than nuts produced by other, less accurate methods, Fischer precision-turned brass and aluminum nuts make possible important savings in assembly operations. Check these advantages:

Countersunk on both sides for faster starting . . .

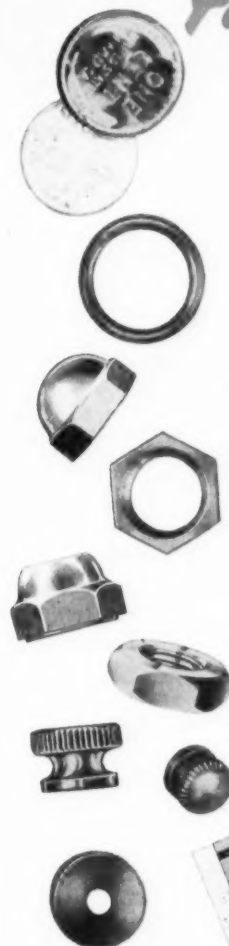
Tapped square with face to Class 2 tolerances for smoother, easier running and superior bearing surfaces . . .

Turned from stock under basic size so they're never tight on wrenches . . .

Tapped through, eliminating "blanks" or rejects . . .

Cleaned and degreased before delivery to save you these operations.

Specify Fischer on your next order. A complete range of standard types and sizes is maintained in stock . . . "specials" can be produced quickly and inexpensively.



Write today for  
Catalog No. 55

**Fischer** SPECIAL MFG. CO.

445 MORGAN ST. • CINCINNATI 6, OHIO

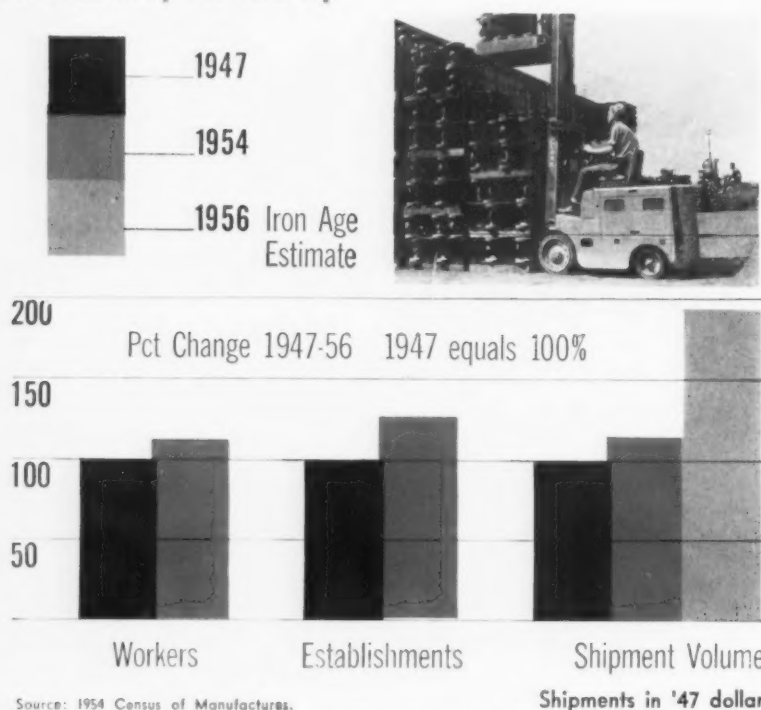


C 284-PS

# INDUSTRIAL TRUCKS: A Big Lift In '56

With producers spending heavily for capital improvements, this segment of industry is experiencing its best sales year . . . New companies, variety of equipment offered are signs of a growing market.

## An Industry Grows Up



Source: 1954 Census of Manufactures.

◆ THE INDUSTRIAL truck and tractor industry chugged through the first half of 1956 at levels 40 pct ahead of 1955's record production. With the pace maintained during the second half, shipments by the industry were expected to pass the \$500 million mark by the end of the year.

All signs point to heavy expansion within the industry, more new firms entering the market, sizable technological advances and marketing of a greater variety of material handling equipment. All are signs of a growing young industry.

Largely responsible for this growth are two factors:

- 1) Steadily rising labor costs throughout the economy.
- 2) Need for speedier material handling to keep up with faster production machinery.

The U. S. Census of Manufacturers shows that value of shipments in the industrial truck

## Industrial Trucks and Tractors Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)			(\$1,000)
United States, total <sup>5</sup>	244	15,710	70,974	10,980	21,884	44,165	121,854	121,074	242,929	6,850	13,926	81,517
Northeast	54	4,381	19,220	2,842	5,582	11,397	34,795	23,631	58,426	1,487	3,737	20,004
East North Central	97	7,660	35,749	5,406	10,768	22,514	59,710	68,825	128,537	4,406	7,342	50,008
West North Central	18	1,046	4,511	764	1,612	2,856	7,333	7,375	14,708	463	463	2,309
South Atlantic	18	383	1,131	307	568	809	1,934	1,732	3,667	124	529	1,934
East South Central	10	264	914	225	491	638	1,373	1,306	2,629	(D)	184	624
West South Central	7	246	1,043	191	376	736	1,978	2,097	4,076	(D)	130	466
West	40	1,727	8,406	1,242	2,464	5,211	14,729	16,105	30,835	310	541	16,177

Footnotes, see p. 264. Source: 1954 Census of Manufactures

# 1 specially-tooled T-W welder assembles 15 bumper guards

and tractor industry in 1954 was \$242.9 million compared to \$162.2 million in 1947. In 1955 sales jumped more than 100 pct over 1954. One of the industry's big customers in this era of huge capital expenditures is the steel industry.

Standardization on a large scale within the industry is not feasible because industrial truck requirements are so variable. This makes the field a fertile one for small companies. Consequently the number of firms in the industry increased from 196 in 1947 to 244 in 1954—a jump of 24 pct. Geographical location of the plants is widespread.

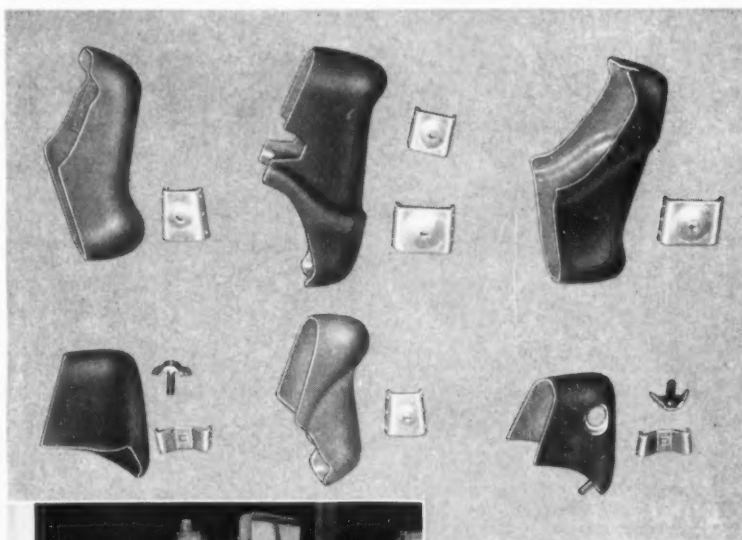
More designers are being put to work to keep up with technical demands of industry. Nonproduction employees in these firms have increased 9 pct since 1947, reflecting employment of more engineering personnel. Total employment rose from 13,900 in 1947 to 15,700 in 1954—an increase of 13 pct.

Although gasoline-powered, fork-lift trucks are the industry's mainstay—they outsell all other equipment 4 to 1—improvements in other types are adding to sales appeal.

Development of the long-life battery, for instance, is making the electric truck more versatile.

Some other general design improvements: lifting speeds have been increased as much as 50 pct, turning radii made tighter, engine power increased, precision controls improved, gradeability and tractive efforts developed and safety features added.

Operating speeds are still limited to about 6 mph for electric trucks, which lessens their advantage on ramps and long hauls.



This custom-built projection welder assembles 15 different models of auto bumper guards at a rate of 300 per hour. One or two mounting brackets are projection-welded on both sides of each guard. Simplified tooling change-over has cut down time 50%.

Specially-designed resistance welders speed assembly of many products that are similar—yet different. Custom tooling provides the answer. Designed for rapid changeover, special tooling reduces down time and lowers unit cost. It also permits economical modification for producing redesigned models. The result is a savings in capital investment and operating costs. For information on reducing your assembly costs now—and year after year, call the nearest Taylor-Winfield office, listed below.



**TAYLOR-WINFIELD Corporation**  
WARREN, OHIO

**ELECTRIC RESISTANCE AND ARC WELDING MACHINES**

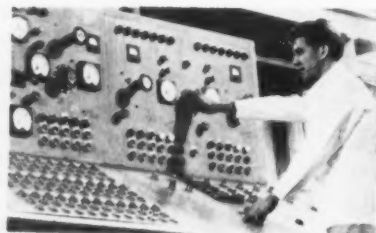
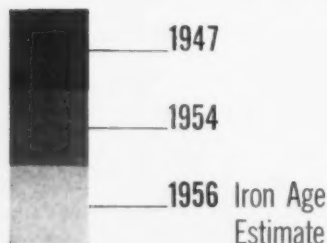
*Sales and Service*

CHARLOTTE • CHATTANOOGA • CHICAGO • CLEVELAND • DALLAS  
DAYTON • DENVER • DETROIT • LOS ANGELES • PHILADELPHIA  
PORTLAND, OREGON • SEATTLE • ST. LOUIS • STAMFORD  
OAKVILLE AND WINDSOR, ONTARIO

# INSTRUMENTS: Set For Expansion

A hectic decade of progress has seen measuring instrument sales double and capital outlays increase more than 150 pct . . . Yet the surface has hardly been scratched . . . Automation steps up the pace.

## Recording New Peak



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ **ECONOMIC EXPANSION** and the high cost of labor are two big reasons why mechanical measuring instruments are one of the prime growth industries of the post-World War II era.

Automation is almost synonymous with instrumentation. A new piece of equipment installed in a plant today is likely to have one or more measuring innovations built into it.

According to the 1954 Census of Manufacturers, shipments by the industry increased since 1947 from \$423.4 million to \$792.2 million—a rise of 87 pct. In 1956, the figure is estimated to have reached \$808 million.

Gaged by spending for new plant and equipment, the industry is getting ready for bigger things. Capital expenditures rose 143 pct in seven years. In 1947, instrument companies spent \$8.8 million for improvements; in 1954, the total was \$21.4 million.

## Mechanical Measuring Instruments Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establish- ments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
		\$1,000		1,000		\$1,000						
						\$1,000	\$1,000	\$1,000	\$1,000			\$1,000
United States, tot.: <sup>15</sup>	609	68,458	298,144	47,879	96,633	187,676	534,240	256,384	792,198	21,424	60,481	281,482
New England	74	9,723	41,614	6,698	13,745	25,290	77,419	32,547	111,539	3,347	8,461	42,172
Middle Atlantic	213	22,114	96,965	15,575	30,431	62,260	165,043	80,693	245,737	4,587	21,362	99,328
New York	127	6,852	28,380	5,473	10,537	20,754	54,273	22,429	76,703	981	10,310	46,557
East North Central	153	19,653	85,530	13,490	28,365	53,241	150,305	85,729	236,034	5,017	17,323	(D)
West North Central	26	7,867	33,675	5,349	10,974	19,688	68,977	21,294	90,271	2,565	(D)	(D)
South	63	2,900	11,610	2,278	4,489	8,358	20,514	9,995	30,509	1,151	2,198	10,636
Mountain	8	61	214	43	82	128	263	381	645	38	(D)	(D)
Pacific	72	8,135	28,533	4,242	8,543	18,708	51,717	25,742	77,460	4,714	(D)	(D)
California	66	6,021	28,027	4,160	8,381	18,407	50,777	25,275	76,053	4,653	3,173	13,167

Footnotes, see p. 264. Source: 1954 Census of Manufactures



The amount increased proportionately in 1956, a record expansion year for industry generally.

Because of the specialized nature of instrument manufacture, the industry has a large number of small firms in its ranks. One hundred and forty-three new companies started in business between 1947 and 1954, bringing the total to 609.

But while the number of firms increased 31 pct, the number of persons employed increased only 13 pct. The total employed in 1954 was 68,500.

The industry is among the leaders in dollars spent for research and development. At least 20,000 different kinds of instruments are manufactured.

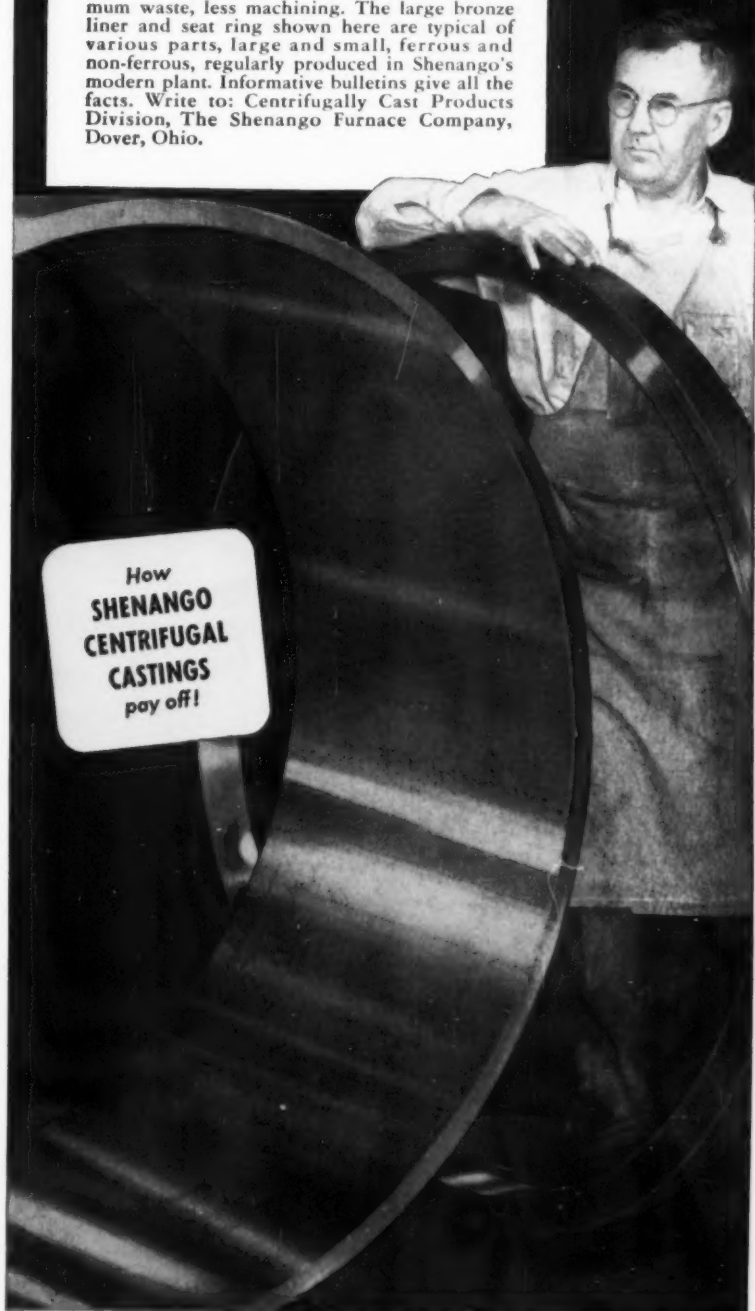
Significant progress is under way in such areas as process control systems, pneumatic controls, miniaturization, thickness control, creep testing, stress relaxation and temperature control.

#### Trends

The future will see more "interlocked" process control systems, permitting coordinated regulation of production. Continuous annealing and tinning, multiple fueling systems are areas where this is already being done.

A control system for regulating the thickness of moving steel is now in use on a five-stand mill capable of producing strip at 3800 fpm. Coming in for more attention are instruments which coordinate temperature, fuel-air ratio, pressure and BTU input. These have special value in metalworking operations subject to interruption for roll changes, stitching, welding and modifications.

**PARTS LAST LONGER**...if they're centrifugally cast by the Shenango process. Tougher parts because of finer, pressure-dense grain, greater strength, better elongation and freedom from sand inclusions and blow holes. There's minimum waste, less machining. The large bronze liner and seat ring shown here are typical of various parts, large and small, ferrous and non-ferrous, regularly produced in Shenango's modern plant. Informative bulletins give all the facts. Write to: Centrifugally Cast Products Division, The Shenango Furnace Company, Dover, Ohio.



# SHENANGO

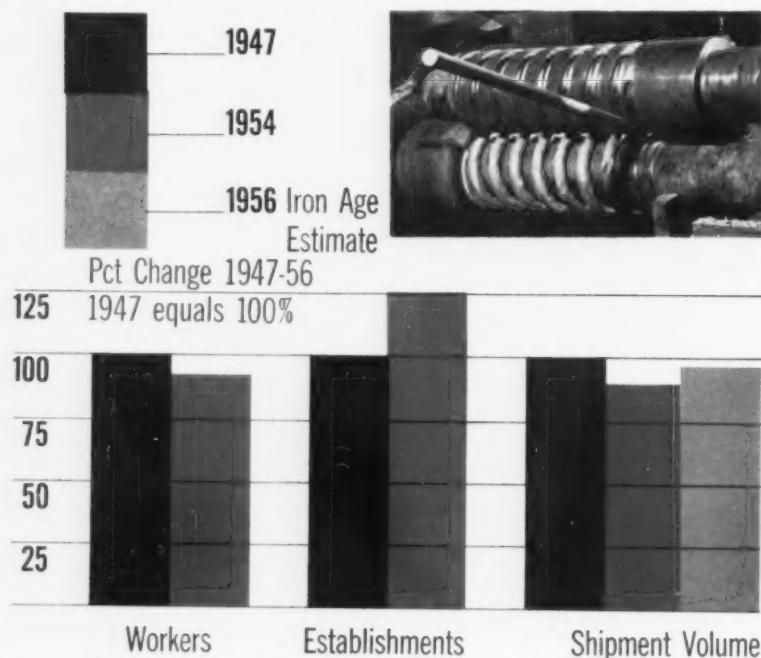
CENTRIFUGAL  
CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES  
MONEL METAL • NI-RESIST • MEEHANITE® METAL • ALLOY IRONS

## SPRINGS: Bouncing Toward Sales Gain

Industry's erratic sales pattern didn't hinder estimated take of \$145 million in 1956 . . . Railroad, automotive orders are big factor . . . Flat springs gain favor in both production and product applications.

### Charting Spring Market Trend



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ LIFE IS never dull for makers of heavy springs. One section of the industry came off the ropes late last year and is now enjoying a sales rate 100 pct over 1954. Another spring group had a booming 1955 but is now seeing a big part of its market sag 20 pct.

Happily, the ups outweigh the downs. Estimated sales of \$145 million in 1956 represent a two-year gain of 12 pct. Things look reasonably bright but producers are keeping their fingers crossed. Shipment volume in 1947 was \$92.6 million.

The erratic behavior of the spring market carries over from the transportation industry, which takes three quarters of the country's leaf springs and hot-wound helical springs.

Last summer's freight car program broke too late to boost deliveries for the whole year; they were under 40,000. But this year the program is off the ground and shipments should go over 60,000.

### Steel Spring Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours (1,000)	Wages (\$1,000)						
United States, total <sup>5</sup>	101	7,078	33,304	5,650	11,429	24,510	50,182	69,540	115,692	36,126	7,760	45,878
New England	6	154	806	131	306	478	880	530	1,411	(D)	101	(D)
Middle Atlantic	29	2,615	11,381	2,098	3,977	8,486	16,967	21,301	37,869	(D)	3,334	(D)
Pennsylvania	14	1,759	7,398	1,403	2,616	5,447	10,732	12,390	23,123	(D)	2,569	14,498
Southwest and North												
Central	66	4,308	21,314	3,419	7,144	15,843	22,703	43,707	78,412	(D)	4,325	26,961
Michigan	15	1,886	10,367	1,563	3,517	8,273	16,280	24,048	40,309	(D)	1,235	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures

## Chemstone earns its place as your fluxstone supplier

What this means to the spring maker is that one 50-ton freight car takes 20 double coil springs, or over 500 lb of spring steel.

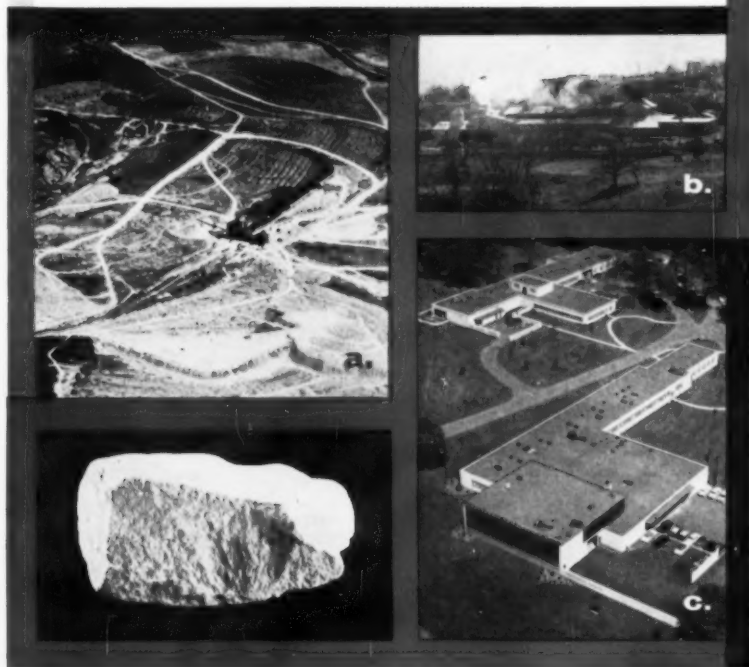
Outlook for railroad springs is moderately rosy. The railroads are expected to hold their orders at about 60,000 cars annually for the next five to ten years. This new stability is welcome by spring makers but it does not mean they will be swamped with orders.

They have the capacity today to triple output. In fact, one of the larger producers could probably handle the entire railroad demand by itself. Moreover, snubbing devices have increased rail spring life and cut into the replacement market. Hydraulic shock absorbers, rubber draft gear devices and air springs are current threats to steel coils.

In the automotive field, spring producers have the problem of active competition as well as violent sales jumps. Chrysler (which makes its own springs) will use torsion bars instead of coil springs on the front ends of all new models. General Motors has gone to air springs in buses, may offer the same thing on new Cadillacs.

But as a general thing, coil springs are used on the front ends of passenger cars; leaf springs carry both axles of trucks and buses, the rear axles of cars. Over half (\$69 million) of all hot formed spring sales came from the automotive leaf type in 1954.

Spring makers don't see anything in sight to weaken their position. Outside of automotive and freight car applications, there are a wide range of spring markets. Hot-wound helical springs are used in earthmoving equipment, crawler tractors, mining tools, presses, conveyor systems.



Steel is big . . . and suppliers of commodities to steel must be big, too. Chemstone's operations meet these requirements from three all-important standpoints:

- a. THREE QUARRIES**—the one shown above is 3,000 acres of purest limestone strata.
- b. PLANTS**—Strategically-located, high-capacity, modern facilities . . . an integrated plant-rail-dock-boat network . . . the kind of operation you can count on for fast, sure, on-schedule deliveries.
- c. RESEARCH CENTER**—where unceasing work goes on in the metallurgical application of fluxing limestones.

Chemstone—and its parent company—Minerals & Chemicals Corporation of America is geared to give steelmakers full service. We invite your inquiry.



LEADER BUILDING, CLEVELAND 14, OHIO



a subsidiary of

**MINERALS & CHEMICALS**  
CORPORATION OF AMERICA

Pittsburgh, Pa. Representative:  
**NEVILLE LIME COMPANY**  
Oliver Building

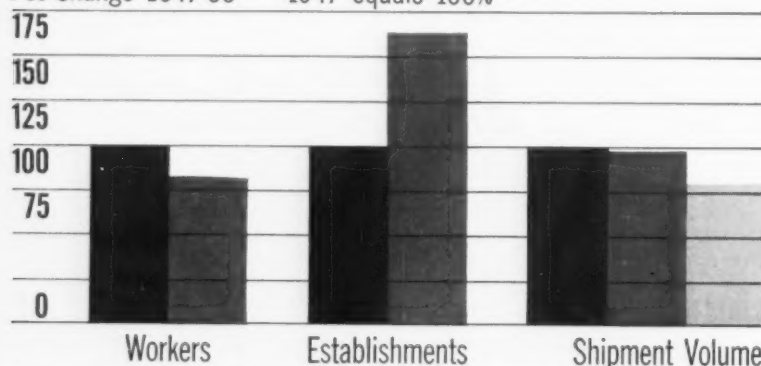
# TRACTORS: Hard Pull For Fewer Sales

A significant drop in wheeled tractor sales in 1956 means tough plowing ahead for the industry . . . But improved tracklayer and rotary tiller sales are bright spots . . . Capital outlays are down.

## It's Tough Going for Tractors



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ A MARKED DECREASE in tractor output in 1956 finds the tractor industry looking back at peak years from the lowest rung on the production ladder since World War II.

Best estimates for 1956 indicate that the number of wheeled tractors—backbone of the industry—turned out by the nation's 154 manufacturers barely reached 230,000 units. In 1951, the industry's best year, wheeled tractor output totaled 559,973 units.

Two other less important segments of the industry, tracklaying (continuous belt) and garden tractors are faring somewhat better. In fact, it is estimated that tracklayer sales may have hit an all-time high. Unit sales have risen fairly consistently since 1947, when 37,607 were turned out.

Garden tractors accounted for 168,009 units in 1947, climbed to a peak of 211,795 units in 1953, and have since leveled off.

According to the 1954 Census of

## Tractor Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
		(1,000)		(1,000)	(1,000)	(1,000)						
							(1,000)	(1,000)	(1,000)			(1,000)
United States, total <sup>5</sup>	154	64,742	287,117	49,542	95,261	205,993	516,484	861,489	1,177,973	51,528	77,317	332,062
New England	4	60	295	52	113	190	850	601	1,451	21	(D)	(D)
Middle Atlantic	10	1,208	4,427	785	1,401	2,566	4,029	5,822	9,851	673	(D)	(D)
Pennsylvania	6	1,028	3,820	618	1,130	2,072	2,996	4,269	7,265	617	1,004	7,223
East North Central	66	49,040	219,221	37,582	73,026	158,069	411,086	539,465	950,552	39,835	58,041	266,696
Ohio	14	1,264	5,853	909	1,667	3,928	7,010	15,317	22,328	338	1,716	(D)
Illinois	15	33,538	148,133	26,443	51,441	110,498	291,263	363,872	655,136	24,178	39,457	168,844
Michigan	13	3,533	17,295	2,627	5,034	10,799	23,813	59,093	82,907	(D)	3,556	(D)
Wisconsin	15	10,361	46,670	7,327	14,348	32,033	87,895	96,388	186,284	(D)	13,109	67,264
West North Central	32	10,112	44,537	7,919	14,383	32,322	70,272	78,194	148,467	8,949	12,449	44,164
Iowa	11	7,969	35,927	6,208	11,317	25,887	53,616	63,712	117,328	8,232	9,618	(D)
South	14	4,078	17,570	3,071	6,066	12,194	28,430	34,289	62,720	1,941	4,668	7,913
West	28	233	1,065	171	329	649	1,814	3,117	4,931	105	466	3,411

Footnotes, see p. 264. Source: 1954 Census of Manufactures



Manufactures now being released, the relatively poor showing of wheeled tractor sales in 1954 compared to 1947 was counterbalanced, to some extent, by a 56 pct increase in the value of shipments.

Shipments by the industry in 1947 were valued at \$332,100,000 in 1947, but by 1954 rose to \$516,000,000.

After taking into consideration the devalued 1954 dollar compared to the 1947 dollar, the gain in value of shipments by the tractor industry during this period can be attributed partly to the steady increase in tracklayer sales and partly to increased value of all units due to design improvements. In an effort to boost sales appeal, manufacturers have incorporated more horsepower, more attachments and luxury touches—such as power steering—into tractor design.

#### Competition Is Tough

Spurred by declining sales, tractor producers tackled cost-cutting projects which resulted in an employment drop from 77,300 in 1947 to 64,700 in 1954—a difference of 16 pct. However, remaining employees boosted their total paycheck from \$227.8 million to \$287.1 million during that period, or an increase of 26 pct.

The lures that attracted 60 new companies into the industry between 1947 and 1954, bringing the total from 94 to 154, have since dwindled. These firms are now faced with the problem of competing for fewer sales. Many are seeking to diversify their lines.

Companies which produce garden tractors are filling in the gaps in their production schedules by making rotary tillers in small sizes—an item that is growing in popularity.

## Research Supplies the Right Combination...



*Chief Sandusky*

**FERROUS AND NON-FERROUS  
CENTRIFUGALLY CAST ROLLS,  
SLEEVES, TUBES, LINERS,  
CHUTES, RETORTS, RINGS,  
BUSHINGS, BEARINGS, ETC.**

A centrifugal casting that will successfully resist heat, corrosion, or abrasion is no "hit or miss" proposition. It's the direct result of a combination of important factors determined before the casting itself is made.

That's where our research department steps in. Experienced technicians work in direct conjunction with your specific problems or needs. They make sure your ferrous and non-ferrous cylindrical castings get the proper start. Quality control, from raw material through final inspection, checks all remaining factors. Machining facilities for turning, boring, and drilling is an additional service.

*If you're not sure of the right combination for your present or proposed needs, our technical aid is immediately available to you.*

C. M. Lovsted & Co., Seattle, Wash. • Tynes Bros., Birmingham Ala. • Cordes Bros., San Francisco and Wilmington, Calif.



**Chief SANDUSKY  
CENTRIFUGAL CASTINGS**

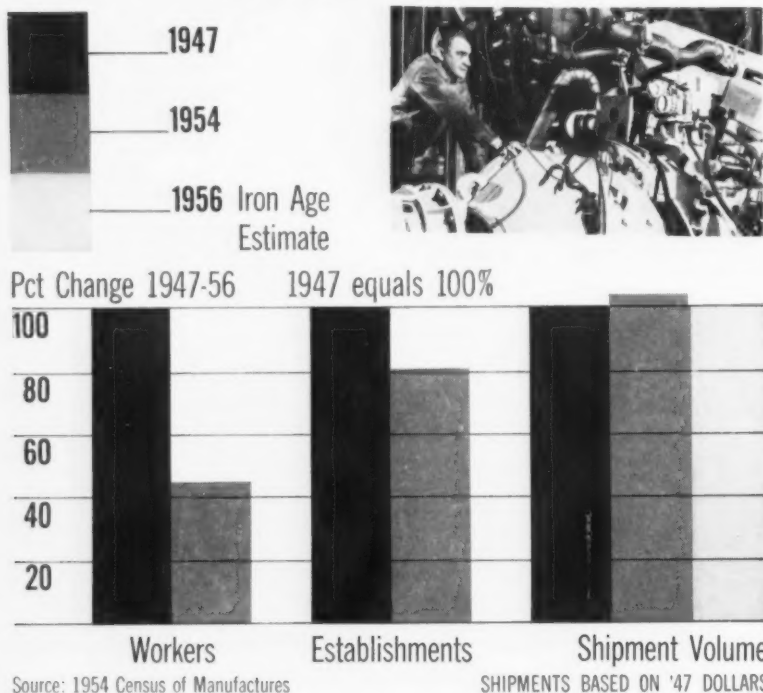
FERROUS AND NON-FERROUS

**SANDUSKY FOUNDRY AND MACHINE CO., Sandusky, Ohio**

# COMBUSTION ENGINES: At Full Throttle

Nation's demand for power sparks engine output . . . Backlog of orders means good business through 1957 . . . Oil drilling, stationary units and electricity generating mean more engine sales.

## Market Steady for Combustion Engines



◆ THE NATIONAL appetite for power, particularly electric, is still increasing. And the internal combustion engine industry is being carried along with it.

Every signpost indicates further increases in demand for stationary power units, traction engines, and electric generating sets. Oil men, in particular, are talking of gains in their drilling requirements at least through 1960.

The internal combustion engine industry, by almost every yardstick, is a growth industry. Dollar values of shipments advanced to \$891 million in 1954, for a 21 pct gain over 1947, in current dollars. Consolidation of manufacturing and increased mechanization has cut employment from 65,500 in 1947 to 51,800 in 1954. At the same time wages advanced 11 pct—\$206.9 million in 1947 to \$241 million in 1954.

It boils down to an 11 pct wage gain offset by a 21 pct drop in employment. But even this would not

## Internal Combustion Engine Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	119	51,777	241,124	39,272	77,138	168,694	394,763	496,262	891,027	21,639	65,515	301,438
Northeast	27	8,181	37,568	6,247	11,967	25,842	44,042	38,334	82,377	1,205	9,428	45,148
All other divisions	92	43,594	203,535	33,023	65,170	142,850	350,719	457,927	808,648	20,433	56,087	256,290
Ohio	9	5,320	24,787	3,858	7,541	16,012	33,120	51,259	84,389	969	6,832	36,952
Illinois	11	7,171	34,756	5,062	9,996	23,055	44,489	63,993	108,483	3,533	10,230	35,458
Michigan	18	11,778	59,115	9,182	17,668	42,471	111,916	182,089	294,006	4,751	14,356	70,113

Footnotes, see p. 264. Source: 1954 Census of Manufactures

# if the question is perforating...

be enough to take the industry out of the woods. It's figured that in the seven year period, costs have advanced 56 pct as compared with a 31 pct increase in value added by manufacture.

Among other points worth noting is a change in the geographical pattern of the industry. Combustion engine firms in the Michigan area have grown extremely strong—by 50 pct gain—and Illinois has shown a 125 pct gain. The northeast and Ohio areas have fallen off slightly. Thus fewer firms, less widely scattered, are putting up with higher costs but are getting a bigger percentage of a rising overall market.

## Three Big Types

Generally, the industrial combustion engine industry, as defined by the Dept. of Commerce, leans heavily to diesel and semi-diesel engines, with non-automotive gasoline engines in the number two spot. These three engine types command the bulk of the market and have advanced 115 pct over the 1947-1954 census period. Gas engines other than turbines and outboard engines have developed into a galloping market that is attracting new production capacity for the industry.

Outboards advanced 152 pct and give every indication of continuing to climb—both in number of units marketed and in price per engine as the buyer demands more horsepower and auxiliary equipment. Gas engines, excluding turbines, rose from \$18,092,000 in shipments (1947) to \$25,993,000 (1954) for a 139 pct rise, in current dollars.

The last seven years haven't been easy, but the internal combustion engine builder is a strong market prospect.



Ever stop and think that the answer to your design problem may be simple perforations? Whatever material you're working with, if it's metal, masonite, rubber, plastic, hard or insulated board for decorative or display usage, Hendrick can help you.

Over a period of many, many years Hendrick has built up the largest stock of dies commercially available.

If you are faced with the need for perforated materials.

# the answer is HENDRICK!

or if you would like more information on how perforating can enhance the sales appeal of your products, get in touch with Hendrick today.



## Hendrick

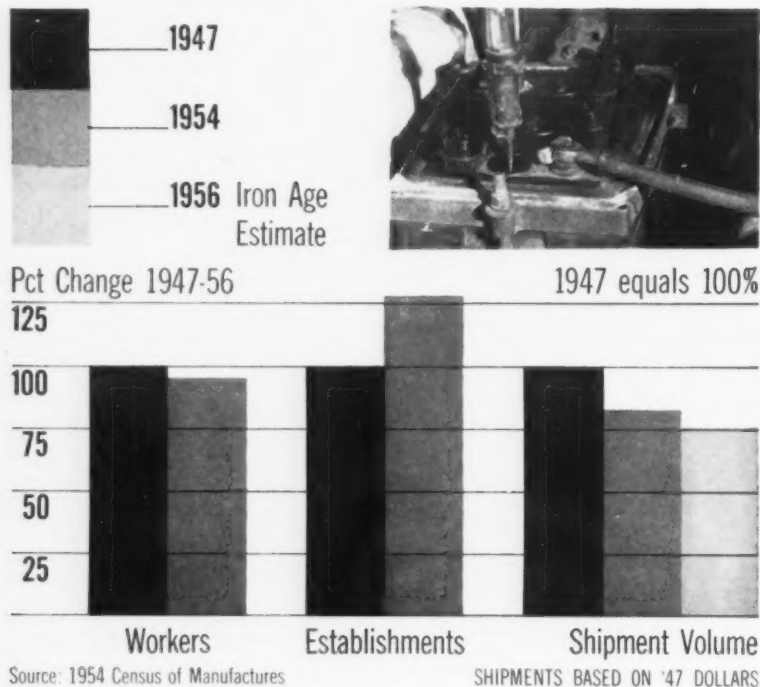
MANUFACTURING COMPANY  
37 DUNDAFF STREET, CARBONDALE, PA.  
Sales Offices in Principal Cities

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

## BATTERIES: Competition Spurs Research

Number of battery producers has increased 25 pct in a decade, but demand is relatively stable . . . Units are getting smaller, lighter and more durable . . . Automotive uses 80 pct of total . . . Guarantees extended.

### Checking The Battery Industry



◆ LOOK THROUGH one of the new transparent plastic battery containers that are appearing on the market and you realize that the storage battery industry is doing a lot toward improving its products' sales appeal.

The transparent containers give the batteries not only an attractive appearance, but they cut down on weight and allow electrolyte level to be checked in the cells without removing the caps.

Behind this and other improvements is a hard fact: battery manufacturing is highly competitive. An influx of 62 new firms into the field in the past decade has increased competition in a relatively stable demand situation. There were 308 companies in 1954 compared to 246 in 1947.

#### Shipments Higher

In 1947, value of shipments by the industry was \$297.7 million, according to the U. S. Census of Manufactures. By 1954, the figure

### Storage Batteries Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours	Wages (\$1,000)						
United States, total <sup>5</sup>	308	15,669	66,872	11,898	23,244	46,414	127,502	213,870	341,374	10,512	16,570	114,246
New England	20	994	2,413	454	915	1,863	4,551	8,907	13,456	282	371	2,201
Middle Atlantic	42	6,228	27,381	4,523	8,575	18,268	45,864	58,675	104,539	3,538	7,685	45,826
East North Central	56	4,499	19,930	3,480	6,917	14,208	41,963	69,851	111,818	2,163	4,354	32,494
West North Central	22	667	2,676	550	1,094	2,089	6,224	12,242	18,467	377	1,010	8,350
South	83	2,083	7,865	1,668	3,335	5,637	17,162	36,682	53,844	1,012	1,799	14,097
West	85	1,597	6,605	1,220	2,407	4,546	11,737	27,511	39,247	3,136	1,351	11,278
California	58	1,252	5,301	960	1,926	3,635	9,341	21,477	30,816	2,828	1,120	9,435

Footnotes, see p. 264. Source: 1954 Census of Manufactures



# Want Lower Material Handling Costs? GET A STRAYER ELECTRIC CLAMSHELL BUCKET BIGGER, FASTER PAYLOADS WITH EVERY PASS

AC or DC, Continuous or Hook-On Service

increased to \$341.4 million—a rise of 15 pct. Estimates for 1956 automotive battery shipments were 3.8 pct higher than in 1954; and industrial battery shipments were roughly 25 pct higher. Automotive batteries account for about 80 pct of the total. The 1956 total was estimated at \$352 million.

Like many industries, improved production methods between 1947 and 1954 enabled the storage battery industry to decrease the number of employees from 16,600 to 15,700—a drop of 5 pct.

## Other Improvements

Some of the other major improvements in battery design since 1947 include better grid alloys, reduction in specific gravity of electrolyte, revival of "dry charging," and development of the sealed cell in nickel-cadmium type batteries.

By improving grid alloys in lead-acid type through use of arsenic and silver, and decreasing the proportion of antimony, some companies are turning out batteries that can take more abuse and neglect.

Another major improvement in the automotive battery is reduction of electrolyte specific gravity. Prior to 1936, the specific gravity was 1.280 to 1.300. But today, improved electrolytic solutions retain conductivity at 1.24 to 1.26; allows batteries to withstand higher temperatures—an important factor with the under-the-hood location of batteries in most cars.

These advances have resulted in upping life guarantees of best line batteries to four years.

The newest thing in alkaline type nickel-cadmium batteries is the "sealed cell." It has advantages of never requiring addition of water and no danger of spilling.



*Strayer Electric Buckets have an almost unlimited range of applications. They can be used whenever there is electricity, inside or out-of-doors. You can attach them to any type of power hoist or crane.*

You'll get lower material handling costs with a Strayer Electric Bucket. Design and construction assure you of that.

Strayer's well-known design uses the enormous closing power of lever arm action plus a terrific boost with electric drive. Usually loads are greater than rated capacity. This power to dig-in never lets a Strayer Electric lift out empty. You get a full load with every bite.

From top to bottom, the Strayer is strongly built for long, steady use, even under extreme conditions. It requires very little service.

*Check these features. They're only a few of the reasons why Strayer Electric Buckets mean lower material handling costs.*

- Operates in its own headroom.
- Hooks on or off in a minute.
- Empties full or part load.
- Digs full or part load.
- No clutches, chain or leaf springs.
- Crane with lifting magnet needs no extra wiring.
- Wide scoops make it clean up as well as digging bucket.
- Automatic controls prevent accidental opening or closing.
- Smooth, steady action. No sudden shock thrown on crane.
- No blind rivets. Generous size bushings and hinges.

Erie Mechanical Hook-On and Two-Line Buckets  
Also Available in a Complete Range of Sizes

For catalogs, write Dept. A17



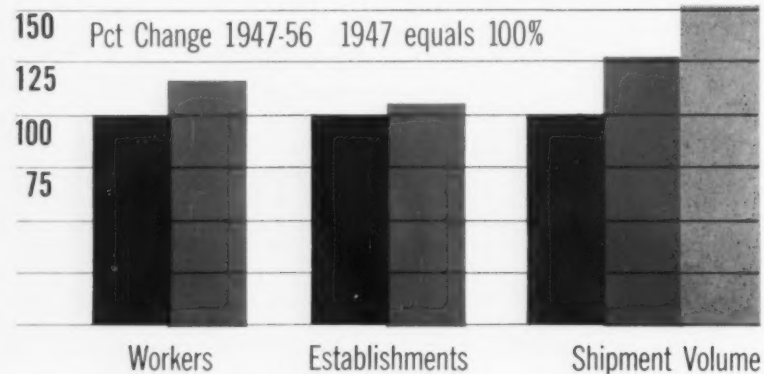
# ERIE STRAYER CO.

517 GEIST ROAD • ERIE, PENNSYLVANIA

## CANS: Preserve Healthy Sales Level

Industry tops by 10 pct its mark of \$1.5 billion in sales for 1955 . . . Non-food packers are biggest customers; food is second . . . New product developments include tinless cans, aluminum containers.

### Stepped-Up Can Manufacture



Source: 1954 Census of Manufacturers

Shipments based on '47 dollars

♦ THE CAN INDUSTRY continues to rack up healthy gains. Sales for the industry were about \$1.5 billion in 1955, were an estimated 10 pct higher in 1956.

According to the 1954 Census of Manufactures, the "Tin Cans and Other Tinware Industry" employed 55,200 workers in 1954 compared with 46,800 in 1947, an increase of 18 pct. Establishments grew from 215 to 227. Value of products shipped increased from \$678.9 million to nearly \$1.4 billion.

#### Packers Are Factor

While there are about 210 manufacturers of tin cans in the country, many make only for their own packing operations. American Can and Continental Can last year accounted for about 80 pct of all sales. And relative shares of the market will probably remain fairly stable.

Non-food uses continue to dominate the field, accounting for about 40.7 billion cans in 1955. Food

### Tin Cans and Other Tinware Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	227	55,234	245,134	48,008	97,574	202,112	482,296	884,477	1,368,766	50,092	46,760	231,503
New England	11	889	3,419	713	1,382	2,518	7,060	13,218	20,278	720	952	4,397
Middle Atlantic	61	13,696	60,499	11,972	24,293	50,368	110,176	182,007	292,184	10,633	11,972	54,116
East North Central	58	18,971	84,285	16,528	33,291	69,538	163,586	270,827	434,404	10,501	15,825	75,544
West North Central	10	3,170	13,641	2,735	5,829	11,098	32,261	59,508	91,769	6,212	2,253	10,880
South Atlantic	20	6,421	28,091	5,538	11,698	23,130	54,509	115,172	169,681	4,592	6,719	32,619
East South Central	8	270	867	252	508	773	2,966	8,827	11,794	91	352	1,662
West South Central	11	3,043	13,916	2,577	5,358	11,091	27,005	51,064	78,069	2,813	2,485	12,499
Mountain	3	223	948	178	368	685	495	5,669	8,164	695	(D)	(D)
Pacific	44	8,616	38,465	7,510	15,042	32,905	84,236	178,183	262,420	13,831	(D)	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures

packing took almost 27.8 billion cans. About 8.5 billion cans went to beer which quenched thirsts in the same period, and the nation's cats and dogs consumed almost 1.7 billion cans of pet food.

#### Soft Drinks Want More

Soft drinks, one of the brightest gleams in canners' eyes, used 344 million cans in 1955. In 1956 they accounted for about 450 million tins, and it could reach 550 million in '57. The can industry foresees the day when soft drinks will be as big a market as beer.

Container industry in 1955 accounted for 4,516,162 tons of tin and terneplate, according to American Iron and Steel Institute. Overwhelming majority of this steel was used by the can industry, with most of it (3,923,489 tons) electrolytic tinplate. Consumption in 1956 was significantly higher. Bureau of Census reports that at half-year the industry shipped 2,143,419 tons of steel in the form of cans, against 1,954,563 tons for the same period 1955.

#### What's New?

Meanwhile, can makers have several new tricks up their sleeves, are pushing research in all directions. Fierce competition gives the can industry a cloak and dagger atmosphere almost unique in metalworking in product development.

Perhaps the biggest push is on the tinless tin can. Vinyl coatings seem to have the lead here, although virtually all metals including copper are being studied as possible replacements for tin in one application or another. Biggest hold-up to date has been development of a can-making machine which can weld side seams as fast as tin-coated cans can be soldered.



Special B Fasteners—Sample brochure sent upon request

## NO JOB TOO TOUGH FOR **B** SPECIALS

These B Specials were made to rigid specification... to withstand severe operating conditions... to assure outstanding service where regular fasteners proved inadequate.

If your fastening problem concerns these important factors, it will pay you to talk it over with B engineers.

The knowledge and experience gained by Buffalo Bolt in more than 100 years of difficult assignments will assure you the most competent advice in the industry... the most economical service in the fastening field.

#### BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

NORTH TONAWANDA, N. Y.

#### • 3 convenient service centers

**WESTERN OFFICE**  
Chicago  
HARRISON 7-2179

**EASTERN OFFICE**  
New York City  
REctor 2-1888

**CENTRAL OFFICE**  
North Tonawanda  
JACKSON 2400 (Buffalo)

Many **GOOD** products  
can be made **BETTER**  
...with



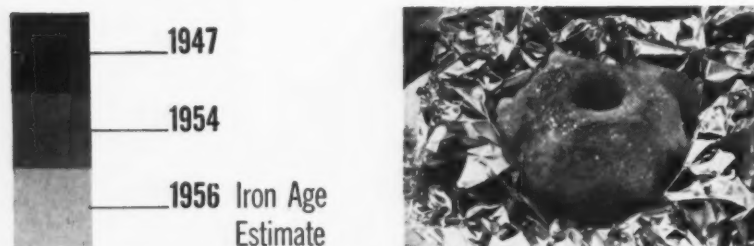
**SPECIAL  
FASTENERS**

## Markets for Metalworking

# METAL FOIL: Wraps Up Bigger Markets

Although 1955 was the industry's record year, 1956 followed growth trend of the past decade . . . Slight dip due to fulfillment of federal chaff stock piling program . . . Aluminum foil is biggest seller.

## Foil Sales Head Up



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ METAL FOIL sales in 1956 were estimated down slightly from 1955 levels, yet the industry is generally happy about this situation.

The dropoff was caused primarily by reduction in the amount of aluminum foil, by far the largest segment of the industry, which will be moved.

In 1954 the Commerce Dept. Census of Manufactures reports net shipments of aluminum foil totaled 153 million lb. In 1955 the industry hit its all time high with 203 million lb shipped. Shipments in 1956 were about 192 million lb.

No distress is apparent over the downtrend for several reasons. Initially, although sales are off slightly, the long term upward movement will be maintained.

Shipments by the industry, which totaled \$60.8 million in 1947, had trebled by 1954, according to the Census of Manufactures. And 1956 shipments were in the vicinity of \$250 million.

## Metal Foil Industry—By Areas

Region and State <sup>1</sup>	1954										1947*	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours	Wages (\$1,000)						
United States, total <sup>5</sup>	85	6,696	25,619	5,534	11,485	21,826	62,472	110,069	180,542	5,419	4,688	24,834
Northeast and North Central	47	3,326	14,174	2,639	5,268	9,907	25,857	41,385	67,244	2,165	3,442	15,481
South	11	3,115	13,336	2,703	5,642	11,249	33,640	68,650	102,291	1,886	(D)	(D)
Pacific	7	254	1,106	190	364	768	2,973	8,033	11,006	(D)	(D)	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures



The record sales of 1955 are not generally considered to be a normal indication of the market potential. Despite the fact that the total will be off, just about every market will use more or at least as much aluminum foil in 1956 as the previous year with the notable exception of one—chaff—strips of aluminum foil dropped from airplanes for the purpose of jamming radio transmissions.

Since the process of jamming by chaff has definite military implications, information about how much chaff has been bought by the chief chaff customer—the government—is unavailable. It is known that the government is no longer buying, and shipment statistics would seem to indicate its stockpile was satiated sometime in the second quarter.

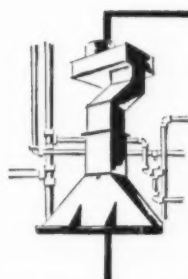
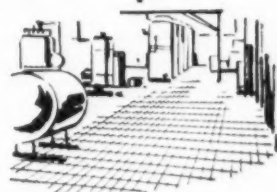
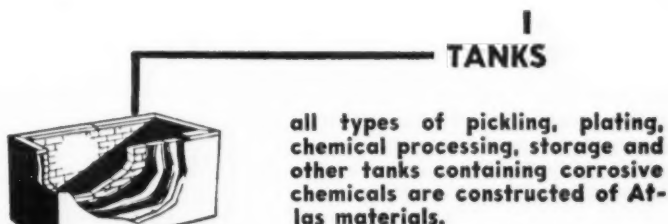
First quarter shipment for 1955 and 1956 are almost the same, 48,119,000 lb compared to 48,178,000 lb respectively. In the second quarter 1956 however only 45,464,000 lb of foil were shipped.

Unique feature of the metal foil industry is the fact that outside of foil, and converted foil (laminated and composition) all products are not measured by the pound. Leaf, aluminum, imitation gold and even pigment, are measured only by total value. In 1954 it ran about \$2.1 million worth.

Gold leaf is calculated by books of 500 sheets, and by various size rolls. In 1954 there were 37,097 books using gold foil and total rolls amounted to little over one million.

Major precious metal rollers, responsible for a large part of the gold and silver foil on the market, noted little change in 1956.

## plant wide protection from corrosion



### PLANT INTERIORS

protection of all corrodible surfaces is possible by using the proper Atlas coating . . . vessel exteriors, walls, beams, ceilings can be coated for lasting service.



Atlas provides a complete corrosion service from on-the-spot technical advice through engineering design to complete construction facilities to carry the job from beginning to end.

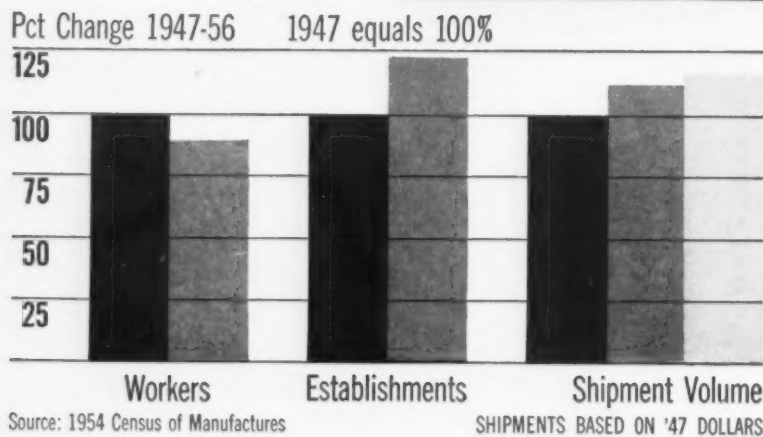
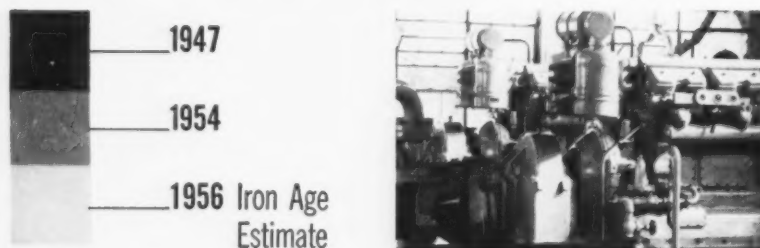
**ATLAS PRODUCES THE MOST COMPLETE LINE OF CORROSION PROOF MATERIALS OF CONSTRUCTION AVAILABLE FROM ONE MANUFACTURER**

## Markets for Metalworking

# MOTORS: Industrial Units Rev Up Sales

Shipments in 1956 were near \$1.6 billion with industrial motors and generators jumping sharply . . . Industries like steel spur demand for motors that give controlled, variable speeds . . . DC motors stage comeback.

## Output Climbs For Motor Makers



♦ SALES of industrial motors and generators jumped sharply in 1956 while sales of appliance and other motors held at high levels.

This combination resulted in shipments for the year that are estimated at \$1.6 billion. The figure represents a 16 pct gain over 1954 and a 40 pct gain over 1947. Even with adjustments for price increases, sales of motors and generators have risen more than \$170 million in the past 10 years.

Orders for industrial motors and generators ran 20 pct over 1955. Deliveries on large motors are stretching out over 12 months. Manufacturers see no sign of a let-up in a demand that surprised them with its strength.

An important part of this demand has come from the steel and nonferrous industries. Both are expanding rapidly and modern rolling operations call for motors that give closely controlled, variable speeds. Same condition must be met in paper, textile, and other

## Motors and Generators Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
		(\$1,000)		(1,000)	(\$1,000)		(\$1,000)	(\$1,000)	(\$1,000)			(\$1,000)
United States, total <sup>5</sup> . . . . .	309	112,002	494,555	82,418	183,678	334,279	844,128	544,949	1,369,077	38,308	125,300	564,218
New England . . . . .	24	7,150	31,397	4,878	10,024	19,666	56,495	37,889	94,385	1,034	9,188	41,387
Connecticut . . . . .	13	2,198	9,501	1,544	3,158	6,075	18,687	18,622	37,310	385	(D)	(D)
Middle Atlantic . . . . .	80	36,119	165,136	26,325	51,973	110,114	297,834	188,525	494,359	15,684	41,310	199,954
New York . . . . .	38	20,238	91,343	14,394	28,302	59,145	141,151	114,333	255,486	12,279	13,357	61,876
New Jersey . . . . .	18	7,578	33,244	5,652	11,441	22,778	50,058	32,438	82,496	852	5,868	(D)
Pennsylvania . . . . .	24	8,302	40,546	6,278	12,229	26,189	106,624	39,751	146,377	2,553	22,085	(D)
East North Central . . . . .	132	53,465	231,538	39,706	78,478	159,219	386,507	251,158	637,667	18,596	60,148	261,012
Ohio . . . . .	50	30,434	131,468	22,775	44,407	93,138	221,512	154,895	376,408	8,187	35,781	159,858
Indiana . . . . .	16	9,295	41,570	6,740	13,605	26,784	71,527	38,581	110,109	3,637	10,254	(D)
Illinois . . . . .	32	4,035	18,395	3,244	6,487	12,072	29,326	16,808	46,136	1,067	3,316	(D)
Michigan . . . . .	13	2,480	9,777	1,915	3,774	6,712	15,406	11,709	27,115	698	4,051	17,067
Wisconsin . . . . .	21	7,210	32,327	5,030	10,203	20,513	48,734	29,164	77,899	3,006	6,746	28,763
West North Central . . . . .	20	9,814	43,242	7,433	14,533	30,047	84,234	43,293	107,828	3,412	10,742	44,764
Minnesota . . . . .	7	2,011	9,762	1,441	2,901	6,205	16,751	9,971	26,722	201	1,915	(D)
Missouri . . . . .	9	7,480	32,114	5,746	11,091	22,873	44,854	31,355	76,229	3,155	7,875	31,396
South . . . . .	8	1,034	3,305	882	1,756	2,290	7,958	3,237	11,296	849	1,452	5,480
West . . . . .	45	4,416	19,934	3,190	6,910	12,831	31,096	22,742	53,838	730	2,460	11,621

Footnotes, see p. 264. Source: 1954 Census of Manufactures

high speed, continuous processes.

For the necessary control and variance, engineers have turned to direct current motors, which were thought to be on the way out a few years back. The motors are hooked into specially engineered drive systems, with motor generators providing direct current and means of control. New package-type motor generator sets are finding wide use in smaller installations.

This trend shows up in sales of integral horsepower motor generator sets. These increased from \$16 million (commercial) in 1947 to nearly \$70 million (total) in 1954. Direct current motors with special generating sets are also used in the elevators of modern buildings.

For automation transfer steps and general industrial applications, alternating current motors are most widely used. AC motors accounted for more than half the integral horsepower sales in 1954.

Among the ac motors, the swing from single phase to three phase has continued. Commercial sales of three-phase motors increased from \$152 million in 1947 to \$194 million in 1954. The higher maintenance and initial cost of single-phase motors resulted in a sales decline to \$26 million in 1954.

In the fractional horsepower field, shipments of universal motors increased from \$36 million (commercial) in 1947 to more than \$50 million (total) in 1954. Gains here stem from increased sales of office machines and of smaller appliances like fans and food mixers. Filling station pumps have also provided a growing market.

Shaded pole ac motors have shared with the universal type through spread of air conditioning units and of other appliances with light power requirements.

## Practical Idea for the Production Man

Efficient electric hoists...to move materials overhead and release floor space for more valuable operations.



### CM LODESTAR ELECTRIC CHAIN HOIST

$\frac{1}{2}$  to 1 ton capacities—First truly heavy duty version of small electric hoist.  $\frac{1}{4}$  ton model weighs only 51 lbs. Heavy duty self-adjusting brake. Upper-lower safety limit switches. CM-Alloy load chain.



### CM METEOR ELECTRIC WIRE ROPE HOIST

$\frac{1}{2}$  to 5 ton capacities—Compact, enclosed design. Low head-room. Continuous duty motor with thermal overload protection for heavy duty service. Precision bearings and helical gears for long life. Only 110 volts at push button control.

Good  
Suggestion  
for the  
Maintenance  
Man!



Rugged lightweight hand hoists and pullers...to make your job easier and safer

### CM CYCLONE HAND HOIST

$\frac{1}{4}$  to 10 ton capacities—Easy to carry and lift. One ton model weighs only 36 pounds. Made of tough aluminum alloy. CM-Alloy load chain. High efficiency. Lifetime lubrication.

### CM PULLER THE "ONE MAN GANG"

$\frac{1}{2}$  to 6 ton capacities—Lifts or pulls at any angle. Lever handle operation. Automatic load brake holds at any point.  $\frac{1}{4}$  ton model weighs only 13 pounds. CM-Alloy flexible load chain.

ALSO...CM Trolleys and Cranes

Call the CM distributor for descriptive literature, prices and fast delivery from stock.



## CHISHOLM-MOORE HOIST DIVISION

COLUMBUS McKINNON CHAIN CORPORATION

TONAWANDA, NEW YORK

REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND

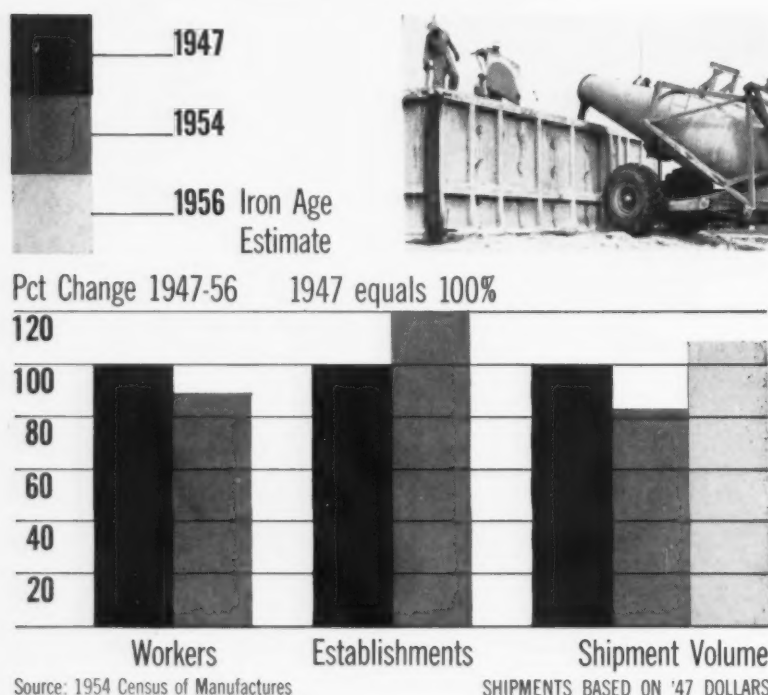
In Canada: McKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO

## Markets for Metalworking

# CONSTRUCTION EQUIPMENT: On The Road Up

Federal road building program will be the industry's best market in years to come . . . An increase in commercial building this year expected to help sales considerably . . . Plate and structural famine might hurt.

## 10-Year Picture of Equipment Industry



♦ **HIGHWAY BUILDING**, commercial construction, and industrial capital improvements are pacing the construction and mining machinery industry to years of continued prosperity.

All segments of the industry are operating toward peak productive capacity with 1956 shipments showing a substantial increase over 1955. Completion in mid-1956 of a \$200 million capital expansion program by construction equipment makers provided increased capacity for some products where short supply warnings had been posted.

These include wheel tractors, concrete and bituminous paving equipment and crushing and screening plants. An additional capital improvement program, also for \$200 million, is underway.

### One Cloud in Sky

Only dark cloud on the construction equipment horizon is the shortage in supply of such items as steel plate, structurals and nickel alloys. These shortages are affecting

## Construction and Mining Machinery Industry—By Areas

Region and State <sup>1</sup>	Establishments, number	1954									1947	
		All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours	Wages (\$1,000)						
United States, total <sup>5</sup>	624	75,169	344,899	55,211	110,140	224,062	577,825	547,888	1,125,514	28,125	84,694	470,132
Northeast	128	9,814	41,403	7,243	14,402	28,436	76,002	63,599	139,602	4,062	15,491	87,179
New York	29	1,209	5,233	868	1,727	3,338	9,518	6,671	16,191	420	1,724	11,088
Pennsylvania	48	4,849	20,231	3,568	6,998	14,026	40,414	32,805	73,220	2,067	9,055	(D)
East North Central	214	45,855	212,731	33,721	66,741	140,161	359,046	351,521	710,567	14,374	48,436	275,387
Ohio	76	15,287	70,198	10,709	20,776	42,803	113,483	118,985	232,469	3,802	17,183	103,905
Illinois	62	11,953	56,009	8,671	17,048	36,548	92,832	84,557	177,189	3,368	9,613	(D)
Wisconsin	34	11,710	55,005	8,942	18,088	38,582	93,935	95,121	189,057	3,970	12,553	(D)
West North Central	87	8,073	35,693	5,890	12,089	22,992	61,440	58,367	119,806	1,878	8,760	49,100
South	91	4,749	24,031	3,532	7,281	12,189	30,094	36,784	66,880	2,236	5,095	20,722
Mountain	26	2,864	12,642	2,005	4,016	7,748	20,944	15,193	36,139	1,047	(D)	(D)
Pacific	98	3,811	18,396	2,815	5,607	12,553	30,096	22,419	52,516	1,524	(D)	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures



mostly production of wheel-type tractors and hauling scrapers.

Reflecting increased equipment need, the industry shipped products valued at \$1.1 billion in 1954, an increase of 21 pct over 1947, according to the Census of Manufactures. Value added by manufacturing amounted to \$578 million in '54, a gain of 23 pct above '47.

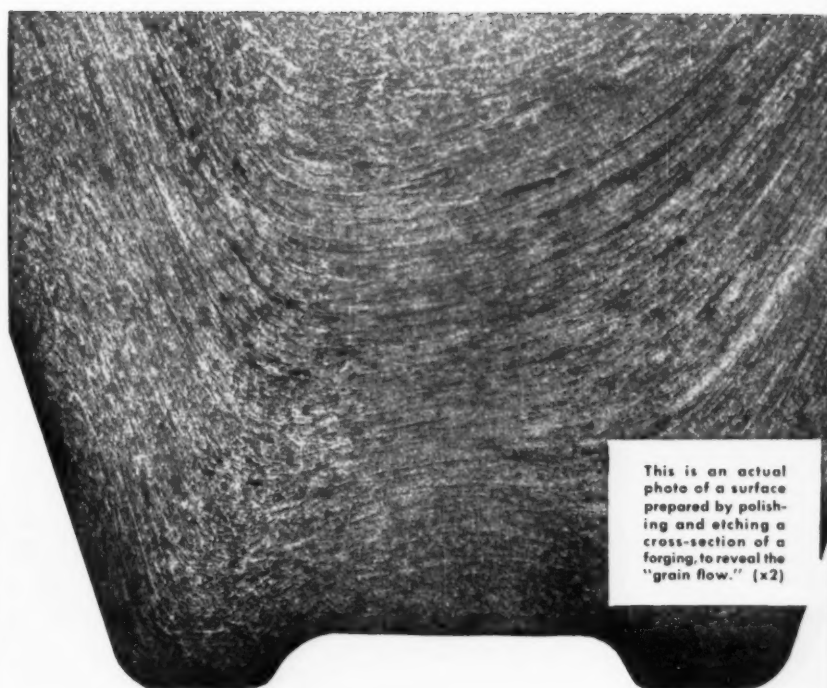
Shipments in '54 included \$1,086 million for manufactured products and \$40 million in miscellaneous receipts for contract work, repair work and sales of scrap. The \$1,086 million in product shipments incorporated \$934 million for cranes, mixers, pavers, scrapers and specialized mining equipment and other products primary to the industry. In addition, it also included \$152 million worth of products primary to other industries such as contractors' off-highway type wheel tractors.

Employment has dropped 11 pct since 1947, falling from 84.7 thousand that year to 75.2 thousand in 1954. A large part of this loss occurred in the northeastern area of the country where employment went down in that period from 15,000 to 9,000. Number of business establishments throughout the country, however, rose from 517 in '47 to 624 in '54.

#### Road Building Boom

The construction equipment industry's current market outlook is bright. New construction reached a record breaking \$44 billion level in 1956. A further increase of 5 pct to \$46.5 billion is forecast for this year by the government.

While residential and industrial expansion will decline somewhat over previous levels, public construction outlays, particularly for highways, will probably rise a substantial 12 pct to \$15 billion.



This is an actual photo of a surface prepared by polishing and etching a cross-section of a forging, to reveal the "grain flow." (x2)

## A PICTURE OF ADVANTAGES YOU CAN GET ONLY FROM FORGINGS

In the picture above you see the grain flow in a forging.

This picture demonstrates two things. First, the metal is dense and free from porosity. The impact or pressure of forging helps make it so. Such density is important when parts must have machined surfaces, when they must provide reliable strength and safety, and when they must be tight against leakage of liquids or gases. This quality reduces rejects and saves money. It contributes to safety and saves lives.

Second, notice how grain flow lines follow the shape of the part. This improves impact resistance and fatigue strength of the part. In closed-die forging, these flow lines can be positioned, to give maximum properties where they are needed. As a result, forged parts can be lighter, safer, stronger, and frequently less costly.

Thus this picture shows you why forged metal is *metal you can trust*. You can trust forgings for performance, and to save money. Find out how forgings can improve your products, your costs. Consult a *Forging Engineer*, and send for the booklets offered below.

### closed-die **forgings** for metal you can trust

**DROP FORGING ASSOCIATION, DEPT. 1A**

419 S. Walnut St. • Lansing, Michigan

Symbolic emblem of the  
Drop Forging Association



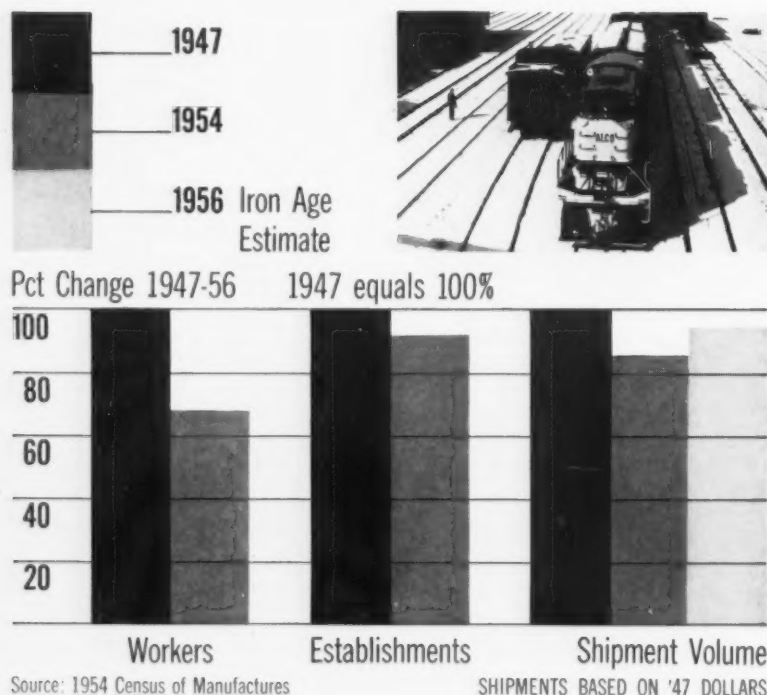
Attach this advertisement signature to your letterhead and mail to Drop Forging Association to receive booklet "What is a Forging?" ☐ or "Management Guide to Use of Forgings" ☐ Check title or titles desired.



## LOCOMOTIVES: There's Cautious Optimism

Rebound in '56 stirs hope for sales of 1500 units during coming year . . . They could pass \$225 million . . . Builders, however, are diversifying into other product lines . . . Number of makers is down.

### Hard Road For Engine Builders



♦ LOCOMOTIVE sales have been no cause for high enthusiasm since 1951, when railroads accepted 3514 units for delivery for a post-World-War-II peak year. Since then the number of units delivered annually has fallen, perked mildly in 1955, and last year rebounded. The locomotive builder momentarily has taken a new lease on life. By October of '56 he had delivered 1125 units as compared with 786 in the same period of '55.

The immediate outlook suggests an advance in total number of units delivered again in 1957, possibly as high as 1500 locomotives, subject to the availability of raw materials. The gain could mean an advance in locomotive dollar sales to over \$225 million as compared with the \$190 million figure for 1956.

Sales departments of at least two locomotive manufacturers differ substantially with the figures used by the Department of Com-

### Locomotive and Parts Industry—By Areas

Region and State <sup>1</sup>	Establishments, number	1954									1947	
		All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours	Wages (\$1,000)						
United States, total <sup>5</sup>	29	20,891	104,274	15,968	31,439	70,574	168,321	239,959	426,261	6,370	30,419	143,092
Middle Atlantic	9	10,247	53,103	7,810	15,154	34,708	66,639	79,602	146,243	(D)	14,616	(D)
All Other Divisions	20	10,643	51,170	8,157	16,284	35,865	121,682	160,355	282,037	(D)	15,803	(D)
Ohio	7	1,832	7,296	1,217	2,479	5,464	10,708	11,369	22,097	2,042	486	2,664

Footnotes, see p. 264. Source: 1954 Census of Manufactures

# metal turnings reduction... in a

# BIG WAY

merce in its advance report on the 1954 Census of Manufactures. Locomotive builders see their sales levels (locomotives only) at about half the Department of Commerce figure.

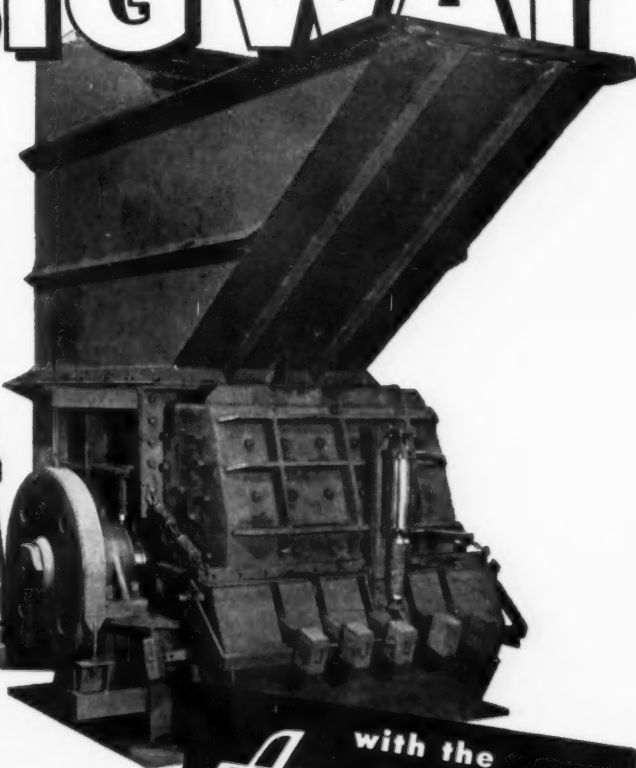
Part of the difference may be due to the high degree of diversification achieved by the locomotive industry in the past decade. Such branching out has included everything from heavy duty electric generator sets to Atomic Energy Commission contracts and the push gives no indication of a letup in the foreseeable future.

This suggests that in spite of the long decline in locomotive sales, the widely diversified (and still diversifying) locomotive industry is becoming a better prospect for metalworking suppliers than ever, and in a number of new categories.

Department of Commerce figures credit the industry with \$421 million plus in product shipments in 1954, a gain of 21 pct over 1947, though locomotive unit shipments were actually almost 20 pct higher in 1947.

In the years between 1947 and 1954, employment has fallen by 31 pct to 20,900 in the industry; materials and labor costs have advanced by only 13 pct as compared with an increase in the value added by manufacture of 32 pct. Capital expenditures in 1954 were only 36 pct of the 1947 figure, but this can be regarded as only a temporary break in the industry's refitting of its production lines for an even wider variety of new products.

In the same years the average number of employees has gone off 31 pct while the payroll has advanced only 7 pct, indicating a relatively strong cost picture.



**Especially Designed  
for . . .**

- Metal Scrap Yards
- Large Industrial Plants
- Aluminum Smelters

*with the*  
**American**  
**ROLLING RING**  
**Metal Turnings Crusher**

- ... Designed for clam shell bucket or magnet feed. Large capacities: 25 to 50 tons per hour.
- ... Built to handle the Primary Reduction of:
  - Metal Turnings
  - Aluminum Alloy Castings (Crankcases, Pistons, Beer Barrels, Pots and Pans, etc.)
- ... Uses the Exclusive American Rolling Shredder Ring Crushing Principle.

**OTHER MODELS** with capacities from 1 to 10 TPH  
WRITE for illustrated literature

**American** **PULVERIZER COMPANY**  
*Originators and Manufacturers of  
Ring Crushers and Pulverizers*

1439 Macklind Ave.  
St. Louis 10, Mo.

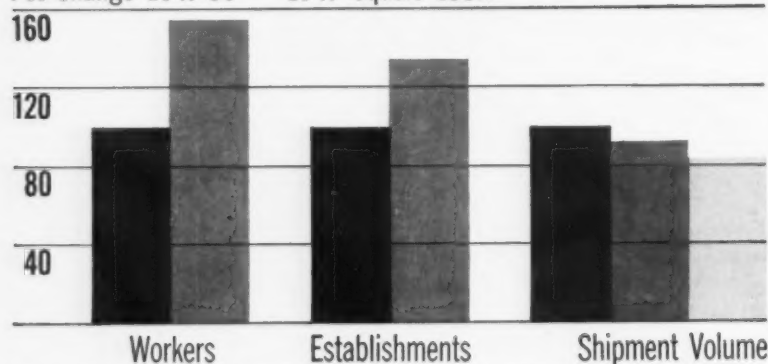
## DRUMS AND PAILS: Roll Up Bigger Sales

The steel container industry has shown steady growth in the past 15 years . . . Drum producers seek to improve their product with lighter but sturdier designs, better linings . . . Top user is petroleum.

### More Capacity For Steel Containers



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

◆ DRUM AND PAIL manufacturers are looking forward to continued rising sales.

As the population grows and markets expand, demand for containers increases correspondingly. With each new industry, the call goes up for more containers to carry its raw materials and finished products. And the call is greatest for containers made of steel.

Last year matched 1955 as the steel drum and pail industry's biggest. Close to 80 million units were turned out. Value of shipments in 1956 was estimated at \$236.7 million. Had it not been for the six-week steel strike, 1956 would probably have topped all production records.

Compare 1956 to 1954, when shipments totaled \$217.2 million; or to the \$173.1 million shipped in 1947, and you can easily plot the trend. Business is expected to be even better in 1957.

The container industry is the second largest consumer of sheet

### Metal Barrels, Drums and Pails Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establish- ments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>3</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	93	10,584	48,501	8,857	17,924	37,057	85,085	131,373	217,239	5,860	10,927	64,188
Northeast	25	2,085	8,976	1,752	3,872	7,574	18,438	27,228	45,667	1,219	1,061	13,310
East North Central	30	3,783	17,934	3,158	6,434	13,623	28,584	42,461	71,048	1,868	5,679	31,542
Ohio	16	2,314	10,471	2,003	3,904	8,444	16,104	24,534	40,639	1,089	4,130	21,638
Illinois	11	1,452	7,400	1,140	2,504	5,123	12,305	17,599	29,905	777	1,369	8,063
West North Central	4	306	1,160	275	552	929	2,304	3,946	6,251	91	761	4,538
South Atlantic	7	1,207	5,684	954	1,915	4,152	8,325	11,794	20,119	(D)	(D)	(D)
East South Central	8	306	1,078	250	544	774	3,002	3,952	6,955	(D)	(D)	(D)
West South Central	12	1,285	5,782	1,049	2,098	4,431	12,242	23,077	35,319	512	1,038	8,277
West	7	1,661	7,906	1,247	2,507	5,572	12,967	18,913	31,661	1,117	(D)	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures



steel. Only the auto makers use more.

The industry attracted 27 new manufacturers between 1947 and 1954, an increase of 33 pct. The 1954 Census of Manufactures reports there were 93 steel drum and pail establishments in the U. S. that year, compared to 70 in 1947.

But even with this sizable increase, employment within the industry was cut three pct during the same span; from 48,500 to 31,400. Attribute the drop to automatic machinery, especially in the painting and enameling operations.

Like mousetrap manufacturers, drum and pail producers are putting out the best product ever, but they're still trying to build a better one. Product development is No. 1 on the industry's planning list. Improvements in drum design and interior linings are the two big areas of interest.

Producers, cooperating with the Steel Shipping container Institute and the Battelle Memorial Institute, are testing several design changes. Included are experiments with light, 24-gage drums, with such features as rolled-in chimes, dropped panel bottoms, flat rolling hoops, and four point contact.

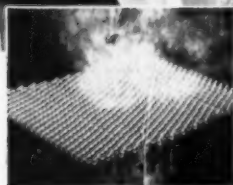
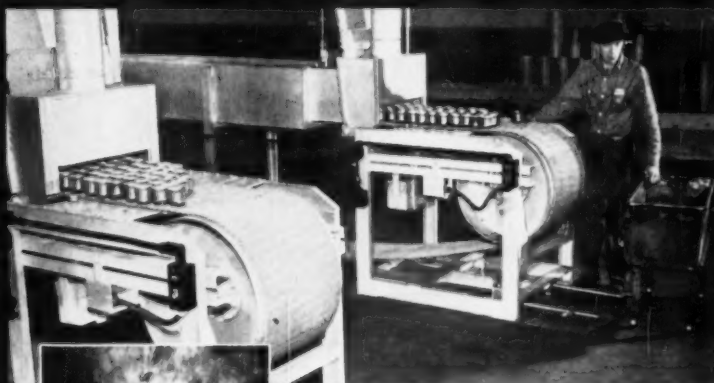
By increasing knuckle radii to 1/4-in., by changing countour of drum bottoms, and by using cold-rolled sheet for bottoms, the industry hopes to further increase the strength and life of their products.

Important steps are being made in lining application. Organic coatings have been perfected which, if properly applied, will permit almost anything to be shipped in steel.

The reliability of lined steel containers is shown by a rapid growth in use.

## Cambridge

### WOVEN WIRE CONVEYOR BELTS take the "hot spots" out of ANNEALING & BRAZING



FREE CIRCULATION of heat and gases through the all-metal belt and around the work permits continuous, uniform heating and cooling as work moves through your plant.

By combining controlled movement with free circulation of process atmospheres, Cambridge Woven Wire Conveyor Belts eliminate batch annealing and brazing. There is no formation of "hot spots" which produce local stresses. Continuous, belt-to-belt flow through subsequent quenching and washing operations as well as heating, cuts costs and provides fast, uniform production.

Not only does the open mesh construction provide free circulation of gases . . . it also permits rapid drainage of process solutions. The all-metal belt is corrosion resistant and impervious to damage at temperatures up to 2100°F. Cambridge belts have no seams, lacers or fasteners to wear more rapidly than the body of the belt . . . no localized weakening.

Cambridge Woven Wire Belts for heat treating are made in any size, mesh or weave, and from any metal or alloy. Special retaining edges or cross-mounted flights are available to hold your product during inclined movement.

Call in your CAMBRIDGE FIELD ENGINEER to discuss how you can eliminate batch handling from your heat treating. Look under "BELTING, MECHANICAL" in your classified phone book. OR, write for your copy of Special Report, "6 Ways to Increase Heat Treating Production" and 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

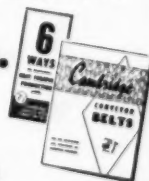


**The Cambridge Wire Cloth Co.**

WIRE CLOTH    METAL CONVEYOR BELTS    SPECIAL METAL FABRICATIONS

Department A,  
Cambridge 1,  
Maryland

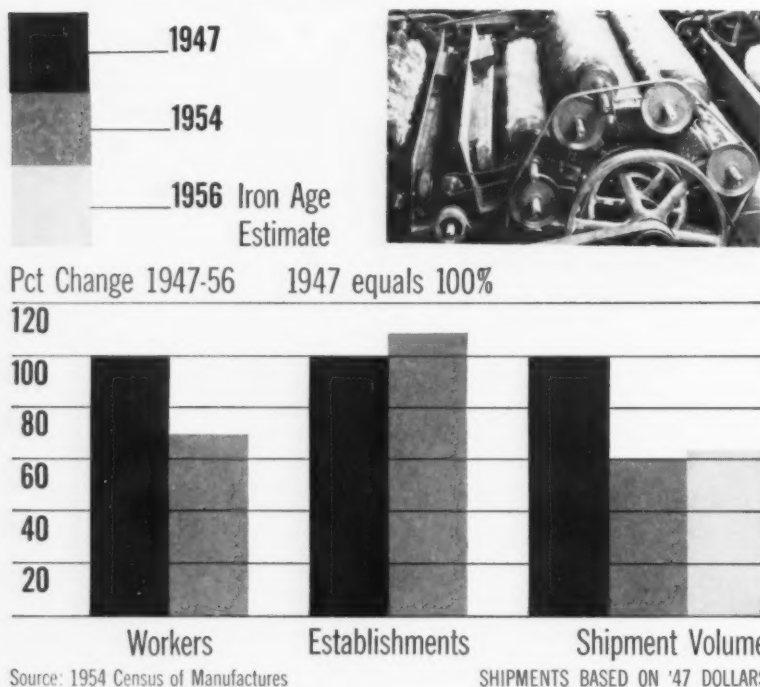
OFFICES IN PRINCIPAL INDUSTRIAL CITIES



# TEXTILE MACHINERY: Old Mills Must Buy

Producers hope to straighten out highly erratic sales curves by selling older mills on new, low cost, high output equipment . . . 1956 was one of the better years . . . Pourings high . . . Upturn in all types.

## Ups And Downs In Textile Machinery



◆ TEXTILE machinery producers are striking hard at mill obsolescence.

The drive to get mills to rid themselves of old, inefficient machinery is not a new idea. But this time it is paying off.

During the past decade the machinery makers have been having their ups and downs—due largely to a fickle textile market.

In 1947 machinery shipments totaled \$403.4 million. In 1951, the total soared to \$498 million. But it sagged to \$336.8 million in 1954. Last year the total bobbed up again to \$408.1 million.

### Call For Spindles

The latest modernization campaign is aimed at low cost, high quality production. Years of research and huge investments lay behind it.

A common opinion in the industry that it would take 40 years for the textile industry to re-equip itself, may be proving untrue. The

## Textile Machinery Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll (\$1,000)	Number	Manhours (1,000)	Wages (\$1,000)						
United States, total <sup>5</sup>	535	36,758	145,694	28,230	56,004	99,042	217,262	119,523	336,785	8,584	53,583	256,436
New England . . . . .	164	18,435	70,937	13,916	28,913	47,424	102,129	59,473	161,603	3,831	33,430	146,839
Middle Atlantic . . . . .	178	10,613	47,868	8,401	16,689	32,932	71,767	33,897	105,663	2,754	14,790	81,638
East North Central . . . . .	21	1,079	5,451	671	1,542	3,193	8,632	3,042	11,675	504	(D)	(D)
West North Central . . . . .	3	39	135	26	84	86	156	67	224	4	(D)	(D)
South Atlantic . . . . .	151	5,950	19,876	4,849	10,165	14,238	31,932	21,736	53,870	1,396	2,990	15,060
North Carolina . . . . .	84	2,970	10,091	2,354	4,941	6,844	17,667	10,709	28,378	672	1,048	5,288
East South Central . . . . .	9	381	1,432	320	659	1,041	2,244	1,018	3,263	79	297	930
West . . . . .	9	57	191	42	77	124	399	285	685	14	38	295

Footnotes, see p. 264. Source: 1954 Census of Manufactures

replacement rate of new spindles—an accepted indicator—began picking up considerably in 1955.

Some companies entered 1956 with a larger backlog of orders than in any year since 1951. Figures ranged from 15 pct to 100 pct increase in sales and production over 1954.

The upturn was noticeable in all types of textile equipment, but especially machines for handling cotton, wool, worsteds, blends and synthetics. It included also preparatory spinning, weaving, finishing and auxiliary equipment.

Tabulations of iron pourings by five major textile machinery producers show that in January, 1952, tonnage began falling off from an average of 2400 a week to 1200 in August, 1954. And it wasn't until August, 1955, that the figure equalled the January, 1952, figure.

Pourings in 1956 were running 500 tons a week ahead of 1955.

One large producer says it has capacity to triple production provided raw materials and additional labor are available. Others have greatly increased capacity in the past six years.

In the period between 1947 and 1954, employment in the industry dropped from 53,600 to 36,800—a decline of 31 pct. Even so, the number of establishments increased 9 pct—from 489 to 535.

Some producers, though, haven't increased capacity and are balancing their textile machinery production with diversified lines. Such companies state that they will be able to take care of any rush orders "but not on a short delivery basis."

They caution that textile mills should start now making long range plans for modernizing in order to get equipment on a systematic delivery schedule over the years.

YOU GET more\* WHEN  
YOU BUY BEARINGS FROM  
YOUR **Bunting**  
DISTRIBUTOR

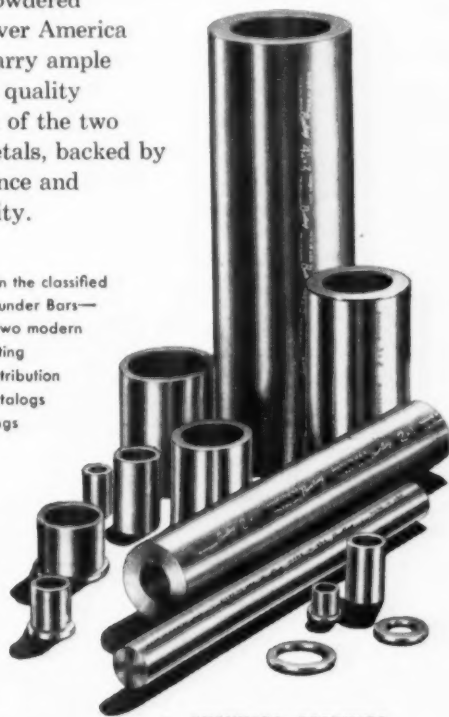


\* **more**  
**availability**

IN A MATTER OF MINUTES—at any time—wherever you are—you can get a few or thousands of completely finished Stock Bearings and Bars made of Bunting Cast Bronze or Bunting Sintered Powdered Oil-filled Bronze. All over America Bunting distributors carry ample stocks of these highest quality products made in both of the two universally popular metals, backed by Bunting's long experience and established responsibility.

Your Bunting distributor is listed in the classified section of your directory usually under Bars—Bronze, and Bearings—Bronze. Two modern Bunting factories and eleven Bunting Branch Warehouses expedite distribution in all areas. Write, or ask for catalogs giving complete dimensional listings and technical data.

All Bunting Sintered Bronze Bars are machined to size on OD for quick and true chucking; the size is stamped the full length of the bar. Both are exclusive Bunting features.



**Bunting**

BUSHINGS, BEARINGS,  
BARS AND SPECIAL PARTS  
OF CAST BRONZE AND  
POWDERED METAL.

The Bunting Brass and Bronze Company • Toledo 1, Ohio • Branches in Principal Cities

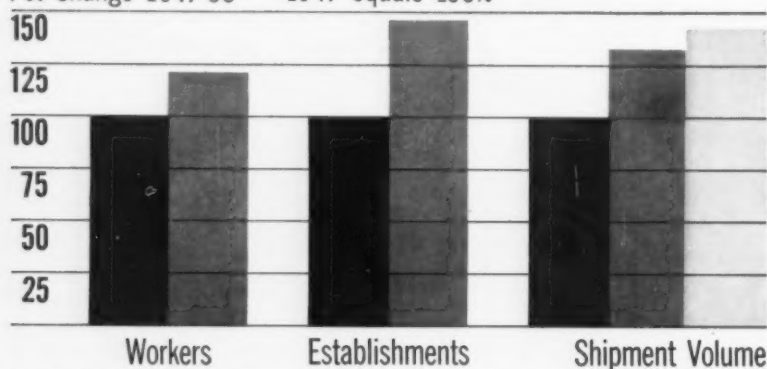
# SCREW MACHINE PRODUCTS: Sales Spiraling

Since World War II this industry has made steady gains . . . Shipments in 1956 totaled over half a billion dollars . . . But high costs spell trouble for some independents . . . Modernization programs in progress.

## Business Takes a Turn for The Better



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

◆ SCREW MACHINE products shipments in the U. S. went up a whopping 81 pct in the years between 1947 and 1954—but observers believe that's only the beginning.

Preliminary results of the Census of Manufactures indicate output of these products was \$424.7 million in 1954 compared to \$226.5 million in 1947. Primary producers account for about 82 pct of the total.

For the long pull the industry is counting on sales of \$700 million per year by 1965 in terms of 1953 dollars. And if inflation continues, they could hit \$800 million.

For 1956, screw machine products shipments totaled about \$522.4 million, slightly below 1955's \$535.2 million.

Observers predict that in years to come producers will be fewer in number but larger in size. The current death rate among small companies is heavy. Screw machines are becoming more costly

## Screw Machine Products Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>5</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>6</sup> .....	1,795	35,009	151,444	29,694	61,030	112,641	246,886	154,561	401,450	11,885	28,823	144,791
New England.....	283	5,767	22,935	4,936	10,306	17,236	37,024	19,896	56,922	1,623	4,363	20,881
Middle Atlantic.....	361	5,700	22,625	4,867	10,018	16,957	37,034	25,183	82,217	2,186	4,372	20,417
East North Central.....	872	18,679	85,044	15,823	32,524	62,830	140,645	90,696	231,342	6,448	17,800	93,663
West North Central.....	66	1,546	6,263	1,282	2,563	4,516	8,611	5,628	14,241	490	641	3,018
South Atlantic.....	18	260	790	226	408	661	1,419	1,323	2,742	88	(D)	(D)
East South Central.....	8	52	189	44	85	132	277	187	466	20	(D)	(D)
West South Central.....	10	155	565	132	271	454	903	744	1,647	124	(D)	(D)
West.....	180	2,848	13,022	2,380	4,849	9,651	20,969	10,902	31,672	965	1,209	5,744

Footnotes, see p. 264. Source: 1954 Census of Manufactures



and need higher skilled operators. In addition, peace-time operation requires more output per dollar.

During World War II, the National Screw Machine Products Assn. notes, a man could set up in business for approximately \$5000. Today it takes about \$125,000 and the returns are slower and smaller. For example, a \$1 million-a-year company nets only about \$70,000 after taxes, and thus, profits would be eaten up by buying 5 new machines.

Modernization of existing equipment is the important goal for the industry. The average age for screw machines by 1965 will be less than half of what it is today (two years ago, for example, 56 pct of all screw machines were 10 years old or older).

Electronic inspection will take over from the human element. This is particularly important because inspection has always been a costly area for a screw machine products firm where rejects have averaged 2 to 3 pct of total sales. And there will be more automation and better material handling.

One of the major problems facing the independent producers of screw machine products is the role of the captive shop.

Independents will probably better than hold their own. First of all because supplementary unemployment benefits in the automotive industry will drive captive work into the open market. Secondly, because the big auto producers will almost certainly attempt to level out production schedules with a minimum of overtime, placing the balance of requirements in the open market.

Just how much of this excess production is turned over to the independents may mean life or death for some.



SCALE CARS

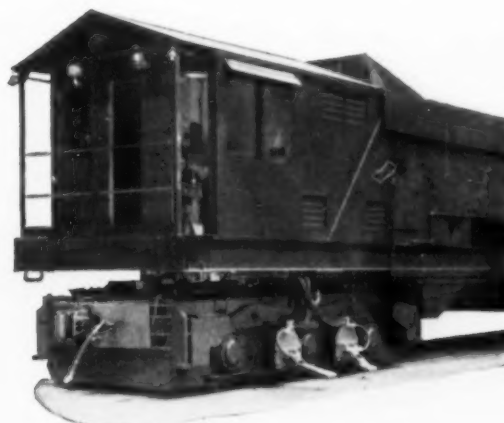


COKE QUENCHERS



ORE TRANSFERS

sixty years of  
car building progress  
with an international  
reputation for  
quality.



100-TON BOTTOM DUMP  
ORE TRANSFER

Each car Atlas builds is  
engineered to specific task  
performance . . . and designed  
for personnel safety.



# ATLAS

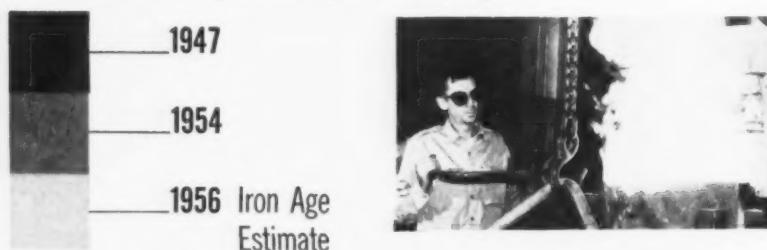
**CAR & MFG. CO.**

1100 IVANHOE ROAD,  
CLEVELAND 10, OHIO

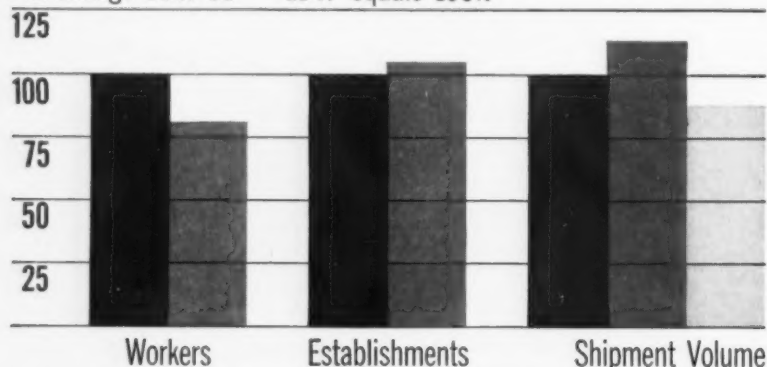
# MALLEABLE IRON: Buyers Pouring It On

Foundry tonnage in 1957 may exceed the million mark . . . Auto industry accounts for 60 pct of output . . . Core drying, shell molding devices speed up production . . . Biggest competitors are welding shops.

## Foundries' Big Tonnage Build-Up



Pct Change 1947-56 1947 equals 100%



Source: 1954 Census of Manufactures

SHIPMENTS BASED ON '47 DOLLARS

♦ MALLEABLE iron foundries are hoping for their third million ton year in history in 1957. They might have made it in 1956 but for the drop-off in production by their biggest customer, the automobile industry which takes over half their output.

From 1947 to 1954 the industry showed an increase of 19 pct in value of shipments according to the 1954 Census of Manufactures. The Census indicates shipments valued at \$184.4 million were made in 1947 by primary producers and increased to \$219.6 million by 1954.

By tonnage, figures of the Malleable Foundry Society of Cleveland show shipments in 1954 for all producers was 822,000 tons. In 1955 it topped 1.1 million tons for the second time in history. For 1956 the total should hit between 925,000 and 930,000. The dip is attributed to a 20 pct drop in the last half, although fourth quarter auto production revival is bringing on a comeback.

## Malleable Iron Foundry Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup> .....	82	24,232	100,548	20,887	39,645	80,753	140,628	78,942	219,571	10,084	29,862	121,661
New England.....	7	862	3,242	727	1,329	2,397	4,532	1,633	5,165	53	1,738	7,675
Middle Atlantic.....	20	4,287	17,659	3,705	7,088	14,334	23,052	9,887	32,950	458	5,087	19,637
Pennsylvania.....	9	2,330	9,447	1,989	3,807	7,497	13,654	5,205	18,859	234	2,463	8,140
East North Central.....	44	17,645	73,937	15,284	29,007	59,912	105,196	63,655	168,847	9,304	21,282	87,637
Ohio.....	13	4,084	16,440	3,611	6,640	13,760	22,115	11,842	33,957	1,618	5,931	25,423
Indiana.....	6	2,195	8,451	1,880	3,631	6,678	10,343	7,460	17,605	657	2,899	9,666
Illinois.....	11	5,424	23,342	4,672	8,966	18,697	35,799	21,650	57,449	2,281	4,881	19,146
Michigan.....	5	4,227	18,716	3,649	7,033	15,119	27,487	18,534	46,031	4,443	4,812	20,340
Wisconsin.....	9	1,712	6,985	1,470	2,735	5,656	9,435	4,168	13,603	403	2,739	13,062
West North Central.....	3	466	1,841	390	930	1,331	2,576	894	3,570	23	581	2,455
South and West.....	8	972	3,869	788	1,489	2,775	5,275	2,761	8,037	244	1,194	4,257

Footnotes, see p. 284. Source: 1954 Census of Manufactures

# DETREX Perm-A-Clor

## REDUCES YOUR PRODUCTION COSTS

Output by all producers for 1957 should hit between 1.05 and 1.10 million tons, according to Lowell Ryan, Founders executive v.p.

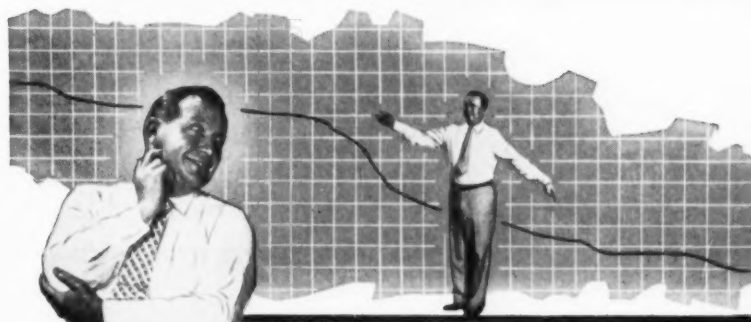
This assumes continued use at about present levels of malleable castings for the automotive, farm implement, and railroad fields. Automobiles and light trucks are now taking about 60 pct of output, farm implements, construction and railroad about 8 pct each. Remainder goes into ordnance, special purpose machinery, and fittings of various types. A good portion of plumbing and pipe fitting hardware is also malleable iron castings but is generally classified separately from regular commercial output.

About 75 pct of the 100-odd malleable foundries are concentrated in the 6-state areas of Wisconsin, Indiana, Illinois, Ohio, Pennsylvania and New York. There has been a decrease of only about 2 or 3 foundries since 1952 and only a modest growth in captive shops.

Only one automaker has its own malleable foundry. Principal auto uses are in differential cases and carriers, transmission parts, rocker arms, crankshafts and brake and clutch pedals. These go both to auto and truck makers direct and to their suppliers.

Malleable foundries, like their cousins the steel and gray iron foundries, carry on a running skirmish for business with welding fabricators, stampers and forgers.

The CO<sup>2</sup> process for drying cores without additional ovens is being used more and in some places ovens have been permanently shut down. A few malleable foundries have gone into dielectric core drying which is ideal for high production drying. Units will dry cores continuously on a moving conveyor belt in minutes.



Detrex Perm-A-Clor lasts longer! And this cuts degreasing costs in two important ways . . . you degrease far more parts per gallon of Perm-A-Clor and you reduce maintenance costs substantially. Both add up to greater savings than you may realize.

The reason for Perm-A-Clor's superior performance lies in the fact that Perm-A-Clor is the only premium grade degreasing solvent available today. It is the *only* degreasing solvent produced in a process which purifies tetrachlorethane before converting it into trichlorethylene. *Yet it comes to you for exactly the same price as ordinary solvent!*

Couple these distinct advantages with the unexcelled technical services which Detrex provides to Perm-A-Clor users and you have an economy picture you cannot match. In fact, it is the very reason that Detrex is industry's largest direct supplier of trichlorethylene.

To get specific facts and figures on the savings in your plant—a Detrex representative will give them to you in black and white—just fill out the coupon below. No obligation if we can't prove our point.

☐ Send me complete information on Detrex Perm-A-Clor

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

DEPT. A-1021



# DETREX

CHEMICAL INDUSTRIES, INC.

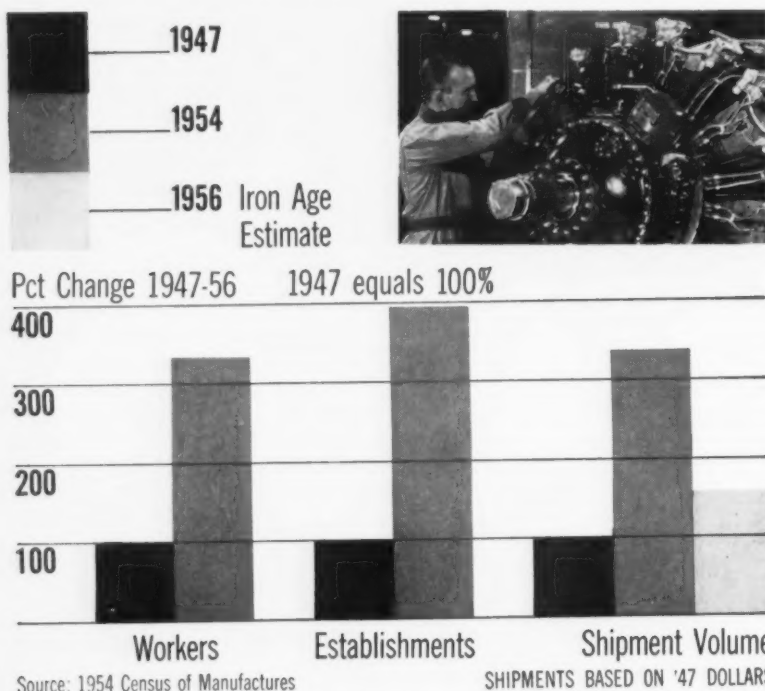
BOX 501, DETROIT 32, MICHIGAN

DEGREASERS • DEGREASING SOLVENTS • WASHERS • ALKALI  
AND EMULSION CLEANERS • PHOSPHATE COATING PROCESSES

# AIRCRAFT ENGINES: Jets Hold Spotlight

With military's needs dominating, jet engines pace industry's growth . . . High development costs and rapid obsolescence cause production headaches . . . Piston engines still major market factor.

## Sky's the Limit for Air Engines



♦ AIRCRAFT ENGINE makers are mapping continued high flying.

Total value of shipments for 1956 was about \$1.9 billion, and 1957 could be significantly higher. The freely-predicted boost in defense spending could shoot the sales curve off the top of the graph in the next few years.

Jets hold the spotlight, but don't write off the piston engine. It will be a major product for at least 10 more years, and should stay an important aircraft powerplant for even longer. At least 41 major airlines are using piston engines exclusively, and one plane can chew up several engines through the normal life of the airframe. What's more, jets are hardly mentioned yet for the fast-growing small plane market.

But the piston engine may have run out of gas as far as growth is concerned. Designers have pushed it almost to its goal of

## Aircraft Engines Industry—By Areas

Region and State <sup>1</sup>	1954									*1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
		(1,000)		(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)		(1,000)	
United States, total <sup>5</sup> .....	234	167,382	819,180	117,276	243,535	522,849	1,435,443	1,753,445	3,188,950	46,688	50,423	252,254
New England.....	43	44,859	211,706	34,804	73,295	152,012	325,219	339,329	664,549	10,977	16,605	(D)
Massachusetts.....	14	5,594	28,355	4,015	8,129	19,121	52,098	44,277	96,375	1,939	4,656	(D)
Connecticut.....	25	38,997	181,940	30,462	64,431	131,798	270,518	293,481	564,000	8,970	13,950	(D)
Middle Atlantic.....	54	41,595	198,021	28,415	57,674	121,659	348,797	363,304	712,102	4,405	10,649	(D)
Pennsylvania.....	19	12,117	55,903	8,734	17,744	36,812	95,901	49,758	145,660	1,328	2,024	(D)
North Central.....	111	75,893	364,066	50,856	105,643	234,907	722,587	1,032,329	1,754,977	24,092	19,380	94,303
Ohio.....	31	29,699	145,013	19,022	38,927	84,915	283,764	379,217	663,043	9,044	8,580	(D)
Indiana.....	21	15,623	81,264	10,195	21,563	48,274	147,533	262,031	409,565	9,357	8,915	(D)
Illinois.....	11	14,007	73,205	9,318	18,449	42,829	105,515	253,008	358,523	1,975	(D)	(D)
Michigan.....	42	7,892	44,936	6,068	13,055	31,806	85,086	62,609	147,695	1,835	451	2,374
South and West.....	26	5,034	25,387	3,199	6,921	14,269	38,839	18,481	57,321	7,214	1,809	11,188
California.....	22	4,246	22,148	2,876	6,304	13,226	35,337	17,616	53,153	977	1,809	11,188

Footnotes, see p. 264. Source: 1954 Census of Manufactures



just under 1 lb of weight for each horsepower. In terms of growth, jets today are comparable to piston engines in the days of the Wright brothers. The military is stressing jet conversion, reports that the '57 air force budget doesn't allow a dollar for piston-powered aircraft. Similarly, 77 pct of all new engines accepted by the Air Force in 1955 were jets. Remainder were spare piston engines for replacements.

The military dominates the aircraft engine business. In 1956, military orders accounted for over \$1.6 billion of the total \$1.9 billion. But the civilian share of \$302 million is higher.

Biggest headaches to engine-makers are the high cost of development and fast obsolescence of new jets. Tab for developing a new jet is about \$50 million. This doesn't include tooling and other production costs if the engine gets that far.

This fast development can really hurt. Most of the 88,000 jets delivered so far to the Navy and Air Force have been made in the last 5 years. The '47 models had thrust ratings of 3400 to 5000 lb. Korean vintage engines ran 6000-6500 lb, with today's range at 8000-12,000. Engines of 15,000-lb thrust are coming soon, with 25,000-lb models now moving off the drawing boards.

Civilian jets and turboprops will start flying about 1960. These will be based on military models, but with considerable modification. U. S. airframe builders have already designed three types of jet airliner and one turboprop transport for airlines here and abroad. Virtually all will be powered by commercial versions of U. S. military engines.

A Conco engineered Crane is **top management's** idea of value. Quality like this means minimum maintenance cost, slow depreciation, tailored-to-the-job engineering, reduced accident hazards. Conco engineered Cranes reflect the more than 37 years experience that lies behind them. Write for bulletin 5000A covering the complete line of Conco cranes, hoists and trolleys.

FROM ANY  
VIEWPOINT

A FINER CRANE



#### CONCO ENGINEERING WORKS

Division of H. D. Conkey & Company, 15 Grove Street, Mendota, Illinois  
AFFILIATES: Conco Engineering Works—Domestic Heating Equipment • Conco Building Products Inc.—Brick, Tile, Stone

JIB CRANES



ELECTRIC HOISTS



CHAIN HOISTS  
AND  
TROLLEYS



HAND GEARED  
CRANES



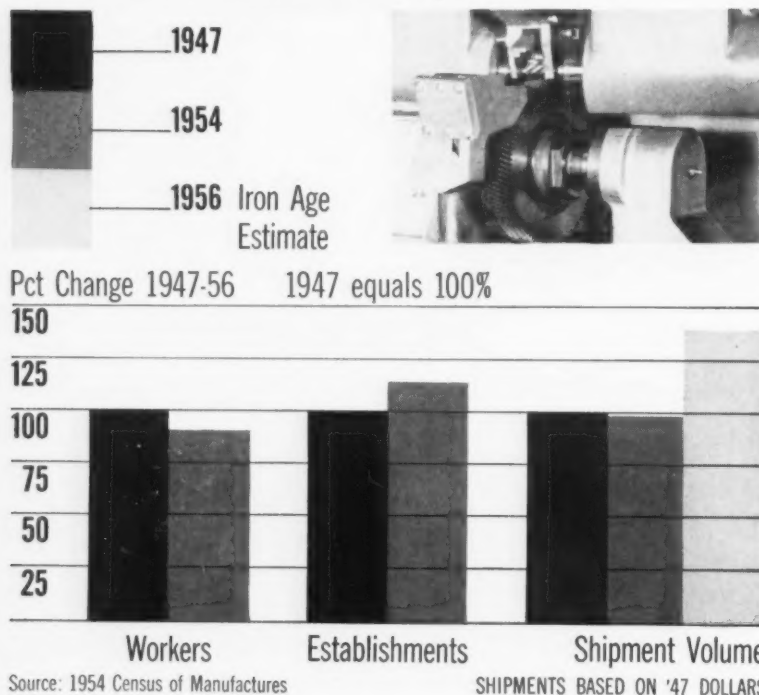
CRANE  
ASSEMBLIES



# GEARS: Synchronized For A Record Year

Outlook for the power transmission industry is rosier in its history . . . Capital expansion programs and military orders call for smaller, tougher gearing . . . Backlogs assure high output well into 1957.

## Power Transmission Industry Pulls Ahead



♦ TREMENDOUS STRIDES in gearmaking technology are paving the way for the power transmission industry's biggest year.

The nation's gear manufacturers, spurred by demands from makers of computers, radar, guided missiles and jet aircraft, are producing in quantity gears not known to be obtainable 10 years ago.

In high production gearmaking for the automotive industry, use of automatic machinery is increasing. Blanks fed into new hobbing machines are worked to size, heat treated, and inspected without touching a human hand.

In aircraft work, the trend is toward hardened and ground gears. Advances in tool design, grinding technique, and heat treating permit machining of metal without disturbing grain structure, burning, or cracking—common causes for gear failure in the past. Finishes of from 3 to 5 mi-

## Power Transmission Equipment Industry—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
		(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)	
United States, total <sup>5</sup>	470	49,268	230,040	37,841	76,063	159,754	390,792	207,984	598,778	14,802	53,995	282,004
New England	44	5,251	21,602	4,147	8,087	15,719	34,722	14,166	48,889	1,279	4,302	20,308
Middle Atlantic	95	9,879	44,547	7,049	14,188	27,726	71,679	43,710	115,389	2,942	12,132	59,663
East North Central	215	29,150	141,739	22,806	45,678	101,067	247,991	125,752	373,645	8,854	33,691	183,481
Ohio	51	6,844	33,070	5,244	10,539	22,818	54,110	32,292	86,403	2,445	8,813	48,405
Illinois	62	8,547	28,068	4,301	9,076	19,229	45,775	28,050	73,826	1,785	5,460	30,835
Michigan	51	4,836	23,766	4,057	8,202	18,425	47,331	19,123	66,456	1,192	5,705	29,263
West North Central	23	954	3,766	786	1,500	2,671	5,420	2,693	8,114	167	972	3,962
South	30	1,577	6,832	1,229	2,598	4,357	10,834	8,246	19,080	560	1,129	5,473
Mountain	7	307	1,353	233	464	870	2,211	1,507	3,719	122	196	(D)
Pacific	56	2,147	10,397	1,604	3,365	7,340	18,031	11,908	29,939	876	1,573	(D)
California	49	1,736	8,201	1,276	2,632	5,579	14,496	7,787	22,286	812	1,295	6,565

Footnotes, see p. 264. Source: 1954 Census of Manufactures

croinches can be had when needed.

More customers this year are asking for smaller, lighter, stronger, harder gears—and they are getting them. It adds up to an estimated \$948 million year for the power transmission industry. And order backlogs will carry record shipments well into the second quarter of 1957.

Prior to 1956, the industry's best year was 1951, when Korean War orders swelled shipments to \$854 million, 10 pct lower than this year's estimate. The U. S. Census of Manufactures shows shipments in 1954 were \$598.8 million and in 1947 they totaled \$428.9 million.














Accompanying this increased dollar volume was an influx of 54 new companies into the industry during the period 1947-1954.

But automatic equipment installations accounted for a 9 pct drop in total employment during the same period. There were 54,000 workers in 1947, compared to 49,300 in 1954.

A lot of progress is being made in speeding up gear hobbing and shaping processes. However, the latest trend is toward displacement of metal rather than removal. Research is intensive, and it is not unlikely that in the near future gear rolling machines will start replacing gear hobbers.

Quieter gears are another coming field, as companies become more conscious of noise problems. By redesigning housings, bearings, and through closer fitting, gear wobble and eccentricity are being reduced.

A whole new market is being created by shaft-mounted reducer manufacturers. They are finding ready buyers for their package unit prime movers and reducers.

<b>PRODUCTION FINISHING</b>	 Model 18	 Model 7
<b>GENERAL FINISHING</b>	 Model 19	 Model 29
<b>TOUCH-UP</b>	 Model 26	 Model 15
<b>AUTOMATIC APPLICATION</b>	 Model 21	 Model 18R
<b>HEAVY FLUIDS &amp; COATINGS</b>	 Model 7E2	 Model 18D
<b>SPECIAL PURPOSE</b>	 Model 171 flocking	 Model 190 dusting—drying
		 Model 31 flow gun

**One of these  
Binks spray guns  
will apply your  
finishes or coatings  
...FASTER...BETTER**

Fine finishes...plastics...heavy-bodied coatings—production line tempo or occasional touch-up...there's a Binks spray gun and nozzle combination that is just right for your job...will give you better coverage with fewer passes.

Binks complete spray gun line is the result of having wrestled with the spray application of every imaginable fluid since Joseph Binks invented the first

practical spray gun over 50 years ago. It is the result of a shirt sleeve knowledge of your finishing and coating problems and how to solve them.

**Free analysis and engineering help**

Whether you plan to establish a new finishing department or want more production of higher quality from your existing operation...call Binks' nearest Branch Office or write direct to the address below. Valuable free analysis and engineering assistance is yours for the asking.

P.S.

Binks can supply everything your finishing department may require... from spray guns to complete, engineered installations.

**Ask about our spray painting school  
Open to all...NO TUITION...covers all phases**



ACCESSORIES



AIR COMPRESSORS



SPRAY BOOTHS

**Binks Manufacturing Company**

3124-30 Carroll Ave., West, Chicago 12, Ill.

REPRESENTATIVES IN PRINCIPAL U.S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

Binks

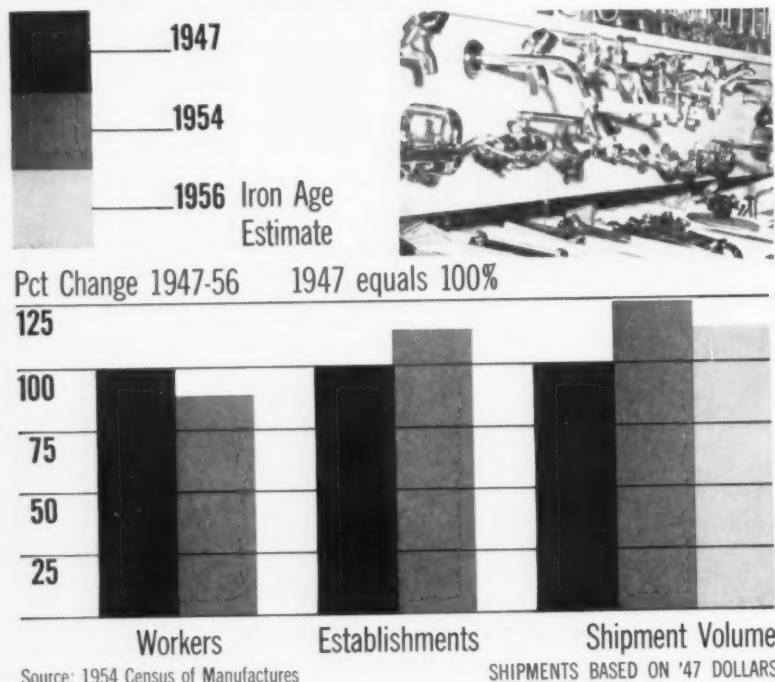
EVERYTHING FOR

SPRAY PAINTING

## PLUMBING: Rides With Construction

Decline in homebuilding is offset for plumbing fixture producers by trend toward 1½ and 2 baths per home . . . Counter type kitchen layouts boost steel sink sales . . . Vitreous china a formidable competitor.

### No Stoppage In Plumbing Gains



♦ METAL PLUMBING fixtures and fittings are in a slight sales dip but not enough to reverse a pattern of long term growth.

Estimated shipments of \$459 million in 1956 represented a drop of 10 pct from 1955. However 1956 business compared favorably with shipments of \$441 in 1954 and \$298 in 1947.

The ups and downs of plumbing sales correspond closely with the rate of construction activity. Value of new construction has jumped from \$14 billion in 1947 to \$20.9 billion in 1954 and \$34 billion in 1955. (adjusted to 1947-49 dollars.)

Last year, industrial construction held up but new housing starts were down from 1.3 million units in 1955 to an estimated 1.1 million. These figures show a lag of nearly 20 pct. However, the value of new homes declined only 9 pct.

The difference comes partly from a trend toward bigger homes. Where the average development

### Metal Plumbing and Fixtures Industry—By Areas

Region and State <sup>1</sup>	1954										1947	
	Establishments, number	All employees		Production workers			Value added by manufac- ture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expendi- tures, new	All employees, number	Value added by manufac- ture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)
United States, total <sup>5</sup> .....	319	30,621	131,717	25,603	50,571	102,079	240,100	201,140	441,242	12,287	34,746	199,081
New England.....	33	2,936	11,763	2,437	4,784	9,200	12,552	20,580	33,112	270	4,708	19,568
Middle Atlantic.....	85	3,635	14,602	2,924	5,532	10,985	26,455	23,902	50,358	748	4,967	19,537
New York.....	56	1,261	5,009	994	1,866	3,194	7,923	12,001	19,945	(D)	838	4,241
Pennsylvania.....	23	1,868	7,517	1,605	3,000	6,178	14,167	8,838	23,106	397	3,462	12,263
North Central.....	115	12,834	56,637	10,310	20,803	42,152	107,118	87,868	194,926	4,736	12,416	67,680
Ohio.....	42	5,627	24,709	4,651	8,777	18,500	44,700	37,110	81,611	1,722	4,339	23,294
Illinois.....	27	1,305	6,073	1,063	2,194	4,233	11,032	9,861	20,894	267	1,516	8,419
Michigan.....	15	1,856	8,261	1,538	2,982	5,646	17,151	15,753	32,905	1,896	1,829	10,277
South Atlantic.....	15	2,633	10,000	2,310	4,527	8,506	24,374	14,240	38,614	1,201	(D)	(D)
East South Central.....	8	5,947	22,331	4,790	9,307	19,791	40,209	30,044	70,264	3,943	(D)	(D)
West South Central.....	9	88	252	80	166	215	492	686	1,178	(D)	82	(D)
Pacific.....	56	3,144	13,929	2,760	5,448	11,235	26,897	23,899	52,796	(D)	(D)	(D)
California.....	53	3,070	13,572	2,710	5,349	11,024	26,347	23,582	51,899	(D)	2,827	(D)

Footnotes, see p. 264. Source: 1954 Census of Manufactures



house in the immediate postwar period had only one bathroom, today's homes are being built with 1½ and 2 baths.

Fixtures and fittings have benefited about equally from this trend. In 1954, sales of metal fixtures came to \$208 million. These covered sinks, bathtubs, lavatories and other pieces that hold water. In the same year, sales of fittings were \$215 million. Fittings include drains, faucets, stops and other water carrying devices.

In the kitchen sink line, there has been a trend away from cast iron construction and toward steel. In 1951 there were 1.19 million steel sinks sold and 1.21 million cast iron. In 1955, there were about 500,000 more steel sinks sold than cast iron.

This turnabout is attributed to the growing popularity of counter type kitchen outlays, and the importance of steel's weight advantage in built-in assemblies. Cast iron is used for the majority of service sinks.

Trend today in lavatories (bathroom basins) is toward vitreous china and away from metals. In 1951 there were 1.6 million cast iron lavatories shipped and 1.4 million vitreous china. By 1955, shipments of cast iron units had declined to 1.5 million while the vitreous china type had increased to 2.1 million.

There have been no great changes in the design of metal fittings over the past 10 years. Parts coming in direct contact with water are generally chrome plated brass. Zinc die castings may be used for faucet stands and other parts that do not directly conduct water. Overall shipments of fittings rose from \$159 million in 1947 to \$215 million in 1954, a sizable increase.

*Generated clutch  
held at close tolerance  
in relation to P.D. of  
spline and helical gear.*

*Involute spline,  
precision tolerance,  
uniform throughout,  
burr-free finish.*

*Helical gear  
ground and polished  
to #24 micro-finish.*

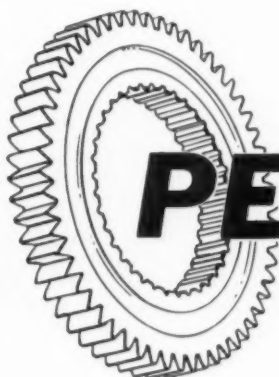
*Threads ground to class 4  
precision tolerance.  
Close tolerance held between  
thread and P.D. of helical gear.*

## DON'T GAMBLE WITH GEAR PERFORMANCE

**Y**OU know that gambling with gears can cost you money — production delays, costly rejects, failures in use. You don't want to take chances with your customers . . . they expect day-in, day-out performance from your machines. Your performance guarantee can be Perkins custom-cut gears . . . precision gears made to your exact specifications. Perkins' 52 years of gear-making know-how, extensive facilities and equipment, and rigid production controls assure uniform tolerances throughout . . . plus a consistent micro finish. You get perfect meshing and full capacity from every gear. Many leading manufacturers — Sikorsky, Stanley, Universal Winding, for example — rely on Perkins for top-quality gears, gears that cost less in the long run. Ask us to quote on your next gear requirement. Then judge for yourself.



**YOURS ON REQUEST**  
Folder illustrating gears Perkins has made — face gears, generated and curvic clutches; bevel, spiral, helical and spur gears; ratchets, sprockets and ground thread worms — from all materials. Includes Perkins facilities for producing various gear types and sizes. Write today.



# PERKINS

**MACHINE AND GEAR CO.**

Dept. 21, West Springfield, Mass.  
Telephone: REpublic 7-4751

## PAPER MAKING MACHINERY: Rolling Along

Customers are waiting 18 months for delivery . . . But orders keep coming in . . . Current backlog assures prosperity through 1957 and well into 1958 . . . More competition cutting into profits.

♦ A NEW paper mill was scheduled to begin operations this year in the South Atlantic Region of the U. S. It won't. In fact, the company confides that it will consider itself fortunate to open its doors sometime in 1958.

The reason: demand for paper industry machinery is booming. Lead time for bigger, more expensive machines is about 18 months. And the best that can be done on the smaller pieces and replacement parts is about 12 months.

### Orders Keep Coming

Major paper industry machinery builders are obviously happy about the situation. But the biggest cause for glee is the fact that

long lead time has not slowed down the rate of new orders. Backlogs in many plants run to about 18 months, enough to assure prosperity through 1957 and into the first half of 1958.

Shipments of paper industry equipment totaled close to \$300 million in 1955. Final tabulations for 1956 will show shipments topping \$400 million. The best industry estimates indicate that 1957 shipments will be \$500 million.

Customers for the paper making machinery have increased. In 1955, 780 paper mills and 277 pulp mills bought enough equipment to turn out 65.1 million tons of pulp, paper and paperboard. In 1956, 796 paper mills and 288 pulp mills bought enough machinery and re-

placement parts to produce 68.6 million tons of pulp and paper.

### Profits Lag

This expansion of market is money in the bank for paper machinery makers. It costs about \$30 million to set up an average paper mill, of which about \$20 million is spent for machinery.

Profits of the paper industry machinery companies have not kept pace with the blossoming sales. The reason: more competition. The U. S. Census of Manufacturers reports in 1947, 149 companies were producing paper making machinery. By 1954, latest year for which information is available, there were 169.

### Paper Industries Machinery—By Areas

Region and State <sup>1</sup>	1954									1947		
	Establishments, number	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees, number	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Manhours	Wages						
			(\$1,000)		(1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)	(\$1,000)		(\$1,000)
United States, total <sup>5</sup>	169	14,693	72,360	11,194	23,107	48,716	108,936	82,861	191,798	4,840	17,088	81,358
New England	46	3,859	18,555	2,832	6,082	11,598	30,641	24,181	54,824	1,961	4,327	22,093
New Hampshire	6	1,164	5,462	862	1,907	3,332	9,617	8,443	18,060	(D)	792	5,738
Massachusetts	33	2,558	12,422	1,878	3,998	7,953	20,103	15,137	35,241	(D)	2,573	13,635
Middle Atlantic	63	4,833	24,177	3,578	7,687	15,721	35,169	21,001	56,171	1,197	6,108	28,156
East North Central	33	4,059	20,261	3,293	6,350	14,887	29,878	30,131	60,009	1,061	(D)	(D)
Wisconsin	15	3,048	15,374	2,633	5,079	12,206	21,936	22,886	44,823	881	2,694	11,307
West North Central	8	222	1,044	167	338	707	2,211	377	2,588	19	(D)	(D)
South Atlantic	7	1,091	5,322	855	1,749	3,733	5,844	4,311	10,156	499	1,414	7,475
Pacific	12	627	3,000	466	899	2,069	5,190	2,857	8,045	100	322	1,713

Footnotes, see below. Source: 1954 Census of Manufactures

<sup>1</sup> D Withheld to avoid disclosing figures for individual companies.

<sup>2</sup> Each producing State not shown separately has been withheld either (a) to avoid disclosing figures for individual companies; or (b) because the State had less than 1,000 employees in the industry. (Additional publishable detail will appear in the final Census bulletin for this industry.)

<sup>3</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>4</sup> Includes cost of materials, fuel, electricity, and contract work; excludes cost of products bought and resold in the same condition.

<sup>5</sup> Includes, for all establishments classified in this industry, not only (a) their value of products "primary" to the industry, but also (b) their value of "secondary" products, which are primary to other industries and (c) their "miscellaneous receipts" for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

<sup>6</sup> Sum of regional figures may not equal U. S. total, due to independent rounding.

# investment

**CMP**  
**RESTRICTED SPECIFICATION**  
**COLD ROLLED**  
**STRIP STEEL**

can feed this automated line at the high speed requirement of the operation.

Costly new equipment is not always the sole answer to production cost problems. Often the wrong raw material may completely nullify expected savings from heavy capital investments in modern machinery.

Consider the case of one manufacturer who installed expensive new forming equipment but was unable to up production to the expected level. Material being formed was cold rolled strip 4" x .060", AISI 1050 steel processed to standard gauge tolerances (.0567" to .0632").

When **CMP** Precision Cold Rolled Strip Steel ordered to a 60% gauge restriction (.0587" to .0613") was furnished, production immediately moved up to the rated capacity of the machines and has remained there.

In addition to increased production, because of the minimization of down time, an incidental and important benefit was the increase in yield per **CMP** ton processed because rejections and out of tolerance parts were eliminated.

Careful consideration of **CMP** Restricted Specification Cold Rolled Strip Steel alternatives on the same careful basis given to your equipment investment, may point the way to similar, or larger pay-offs.

Why not check the possibilities today?

**CMP**  
**WHERE YOU**  
**CAN GET**  
**SPECIFIC SPECS.**  
**FOR**  
**SPECIFIC JOBS**

**LOW CARBON**  
**HIGH CARBON**  
**Annealed or Tempered**  
**STAINLESS**  
**ALLOY**  
**ELECTRO ZINC COATED**



**THE COLD METAL PRODUCTS CO.**  
**GENERAL OFFICES: YOUNGSTOWN 1, OHIO**  
**PLANTS: YOUNGSTOWN, OHIO AND INDIANAPOLIS, IND.**  
**SALES OFFICES: NEW YORK CLEVELAND DETROIT INDIANAPOLIS**  
**CHICAGO LOS ANGELES SAN FRANCISCO**

# payoff

**CMP STRIP PROVIDES**  
**MAXIMUM NUMBER**  
**OF PRECISION PARTS**  
**AND HELPS ELIMINATE**  
**COSTLY HUMAN ERRORS**

## A tooling problem?



INVESTIGATE

**RED METALS SEAL**

### ALUMINUM TOOLING PLATE ALLOY 2424-C

Alloy 2424-C is Red Seal's new designation for their aluminum tooling plate and bar stock. The new designation is to help you better understand material composition. The "C" indicates material is cast.



#### Investigate

the advantages of low cost Red Seal Plates and Bars for your tooling requirements.

Call or write for this new Red Seal Aluminum Products Catalog.

Eastern Distributor:  
Aluminum Division of  
Atlantic Steel and Iron Co.  
Page Boulevard, Springfield, Mass.  
Phone: REpublic 9-9611

**RED SEAL METALS CO.**  
10035 Burtis Street  
South Gate, Calif., LOrain 6-5105

## FREE AIDS

### New Technical Literature:

#### Catalogs and Bulletins

##### Motor

Construction features of wound rotor motors for a variety of applications are described in a new bulletin. They are designed for use wherever high starting torque with low starting current is needed, power supply is limited, intermediate speeds are required, smooth acceleration is desired, or where high inertia loads must be accelerated. *Allis-Chalmers Mfg. Co.*

For free copy circle No. 1 on postcard p. 273

##### Power tools

A new catalog of power tools for cutting, shaping, drilling and finishing metal has just been produced. Several new tools are described therein for the first time. Included are details, specifications and illustrations of band saws, contour saws, band filers, cutters, shapers, drill presses, tool and knife grinders, jig saws, jointers, lathes, planers, belt and spindle sanders, saw jointers, shapers and spinning tools. *Boice-Crane Co.*

For free copy circle No. 2 on postcard p. 273

##### Maintenance

Latest issue of a company publication offers, among other articles, one on circuit breaker maintenance. Also, a simple method is outlined for analyzing d-c machine performance. *Westinghouse Electric Corp.*

For free copy circle No. 3 on postcard p. 273

##### Wire rope

Wire rope slings and assemblies are covered in a booklet just off the press. The book is designed for quick and accurate sling selection and ordering. It is organized around a simplified coding system. *John A. Roebling's Sons Corp.*

For free copy circle No. 4 on postcard p. 273

##### FOR YOUR COPY

**Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 273.**

##### Pyrometer

New 8-page bulletin describes a portable potentiometer pyrometer with interchangeable direct-reading scales. The unit checks and calibrates all types of thermocouple-actuated temperature instruments, and many electrical instruments. Temperatures or millivolts are read directly, without charts, graphs or conversion tables. *Technique Associates.*

For free copy circle No. 5 on postcard p. 273

##### Fans

Containing 16 pages, a new technical bulletin completely describes a new radial blade fan for high volume, high pressure applications. The booklet illustrates and describes the fan's operation, applications, performance characteristics and design. Several charts illustrate performance curves of accurate ratings for commercial motor speeds. *Buffalo Forge Co.*

For free copy circle No. 6 on postcard p. 273

##### Tap drivers

Three types of tap drivers, designed to increase tap life and production, are described in a bulletin. Tension and compression, standard, and quick-change drivers, all using a "safe-torque" drive release safety feature, are described in the eight-page bulletin. *Scully, Jones & Co.*

For free copy circle No. 7 on postcard p. 273



### Air ducts

An aluminum air duct guide just issued provides an up-to-date and complete engineering treatise on this subject. In addition to a resume of aluminum's advantages for air ducts, an explanation of recommended alloys and tempers with their properties, a section on prefabricated ducts, and details of research recommendations for noise control in ductwork, the book contains five specific areas of other information that makes this book really six complete guides in one. It contains 130 pages and many charts and tables. *For free copy, write on company letterhead to Reynolds Metals Co., 2500 S. 3rd St., Louisville 1, Ky.*

### Testing machines

Universal testing machines are described in a new, 40-page bulletin. It includes information and specifications for standard units of from 500 to 1,000,000-lb capacity. Comprehensive descriptions of independent loading, weighing and indicating systems are also described. *Tinius Olsen Testing Machine Co. For free copy circle No. 9 on postcard p. 273*

### Tapping unit

A homing device that extends the range of precision tapping machines is described in a data sheet. It pictures and explains how this unit reduces to routine many precision tapping operations which have heretofore been done only at "special handling" cost, and at risk of tap breakage and work damage. *The Hamilton Tool Co. For free copy circle No. 10 on postcard p. 273*

### Heat treat furnace

A manufacturer's newest medium capacity automatic continuous heat treating furnace is described in a bulletin. Operational advantages, principle of operation, capacity, construction and other important information is included. A photograph, cross-sectional diagram and complete description are contained. *American Gas Furnace Co. For free copy circle No. 11 on postcard p. 273*

# Saves 40% Space! STRONGER, TOO

Than Outmoded  
Tie Rod Cylinders!

OFF SHELF  
DELIVERY

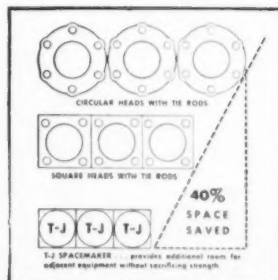


Only **T-J**

## Spacemaker CYLINDERS

Offer All The Extras As Standard!

- NEW exclusive Ingenious Cushion Designs . . . Super Cushion Flexible Seals for Air . . . New Self-Aligning Master Oil Cushion
- Compact design eliminates tie rods, saves up to 40% space
- Proven Performance . . . with Extra High Safety Factor
- Hard Chrome Plated Bodies and Piston Rods (Standard, at no extra cost)
- OIL pressure up to 750—AIR to 200 P.S.I.



NEW LITERATURE . . . send today  
for new Bulletin with complete  
details of Spacemaker line.

You'll find many answers to *automation* in your plant with T-J Spacemaker Cylinders! Designed with years-ahead features for top performance and dependability. Wide range of styles, capacities . . . for all kinds of push-pull-lift operations . . . reduces man-hours and costs! Write The Tomkins-Johnson Co., Jackson, Michigan.

MEMBER OF THE NATIONAL FLUID POWER ASSOCIATION

**T-J** **TOMKINS-JOHNSON**  
DIVISIONS, AIR AND HYDRAULIC CYLINDERS, CUTTERS, CLINCHERS

# For GEARS to build AMERICA'S ROADS



GEARS, thousands of them, will go into the construction machinery needed for our nationwide program of building highways and roads. An increasing number of these will be Fairfield Gears. Already one of America's largest independent producers, Fairfield's facilities are being further enlarged this year with approximately one hundred percent more space in heat treating and thirty-three percent more space for machine installations.

If you use gears in the product you make, we believe it will pay you, as it has others, to become acquainted with FAIRFIELD —the place where fine gears and differentials are produced to meet your specifications EFFICIENTLY, ECONOMICALLY! Your inquiry will receive prompt attention.

## FAIRFIELD MANUFACTURING CO.

2319 S. Concord Rd.

Lafayette, Indiana



Fine Gears

Made to Order

TRACTORS • CONSTRUCTION MACHINERY • ENGINES • BUSES • FARM IMPLEMENTS • MINING MACHINERY  
DIESEL LOCOMOTIVES • MACHINE TOOLS • AIRPLANES • HEAVY DUTY TRUCKS • OIL FIELD EQUIPMENT

## FREE TECHNICAL LITERATURE

### Precision grinders

A new 28-page condensed general catalog includes descriptions and specifications of standard and single purpose precision cylindrical grinding machines. *Landis Tool Co.*

For free copy circle No. 12 on postcard p. 273

### Acid handling

Up-to-date instructions on the safe unloading and handling of sulphuric acid are presented in easy-to-read form on a new 17 x 22-in. wall chart. It is printed on special moisture-resistant paper. It describes step-by-step the proper methods for pump unloading and air unloading of tank cars, with special attention to cold weather procedure. Diagrams of piping arrangements are shown for both methods, as well as a list of safety "do's" and "don'ts." *Olin Mathieson Chemical Corp.*

For free copy circle No. 13 on postcard p. 273

### Controls

A new periodical contains information on new developments in infrared control systems. A question and answer column describes several problems. Reports on new literature are also contained. Published quarterly, the newsletter is designed to keep engineering and other interested personnel informed of the latest developments in the controls field by the manufacturer who publishes the four page issue. An item also explains how controls count in use aboard radar picket planes. *Servo Corp. of America.*

For free copy circle No. 14 on postcard p. 273

### Shaft-drilling

A four-page folder now available announces a new development in shaft-drilling equipment. It says this unit saves set-up time, drilling time and manpower. These units can be tailor-made for any shaft size. Given four basic factors the company's engineers can design the jumbo to fit the operation. These are: (1) maximum weight limitations, (2) shaft dimensions, (3) minimum compartment limitations, and (4) size of opening at the headframe. *Ingersoll-Rand.*

For free copy circle No. 15 on postcard p. 273

*Controlled Quality*  
MAKES THE DIFFERENCE!



- ① Faster Machining
- ② Longer Tool Life
- ③ Finer Finish

WITH

**WYCKOFF**

COLD FINISHED

**LEADED STEELS  
AND  
SCREW STOCKS**

Complete range of analyses  
in quality-controlled free-  
machining LEADED STEELS  
and SCREW STOCKS to your  
specifications

**COLD FINISHED STEELS**

Carbon, Alloy and Leaded Steels  
Turned and Polished Shafting  
Turned and Ground Shafting  
• Wide Flats up to 14"  
All types of furnace treated Steels



**WYCKOFF STEEL COMPANY**

GENERAL OFFICES:

Gateway Center, Pittsburgh 30, Pa.

Branch Offices in Principal Cities

Works: Ambridge, Pa.—Chicago, Ill.—Newark, N.J.—Putnam, Conn.

**HENRY CORT** made a vital and far-reaching contribution to the steel industry when he patented his rolling process in England, in 1783. Before Cort designed and built a practical rolling mill, tilting hammers had been used to produce iron bars. This laborious process produced only about one ton of bars in 12 hours. Cort first shingled his iron into half blooms at welding temperature, then reheated and passed the hot slabs through grooved rollers of his own design. In this way he was able to produce no less than 15 tons of bars in a 12 hour period.

While not the first to attempt rolling, Henry Cort's successful process justly earned him the title "father of the rolling mill."

## *Great Names in Steel Making #IV*

**H**enry Cort's rolling mill followed a pattern as old as steel making. Whenever the need has become great enough, the right men have always developed the proper process or product to meet it.

In the modern field of industrial lubrication one thinks of such developments as the "E. P." lubricants which made today's high speed rolling mills practicable, of "Palmoshield" which freed America from dependence on imported palm oil, and of the wire drawing and cable lubricants which Ironsides engineers have originated in answer to compelling needs.

Keeping pace with 64 years of progress in steel rolling has made Ironsides' "Gear Shield" synonymous with satisfactory roll neck lubrication. So much so, that others frequently refer to their lubricants as "gear shields," even though Gear Shield is the exclusive trade mark of The Ironsides Company.

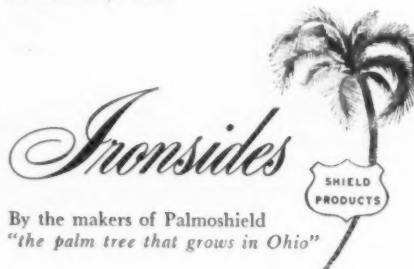
That steel men recognize this contribution is evidenced by the fact that nearly every major steel producer uses "Gear Shield" lubricants.

Today's rolling mills, so far advanced beyond Henry Cort's pioneer process, demand equally high standards in lubricants. Ironsides engineers work closely with superin-

tendents, lubrication engineers and rollers on problems of temperature, pressure, pumpability and water repellency. Ingenuity and research are put to work until a completely satisfactory answer is found. For example, Ironsides roller bearing Shield, developed to meet the need for an extreme pressure lubricant, has load-bearing capacity in excess of bearing manufacturers' standards, and carries the approval of leading bearing makers as a result.

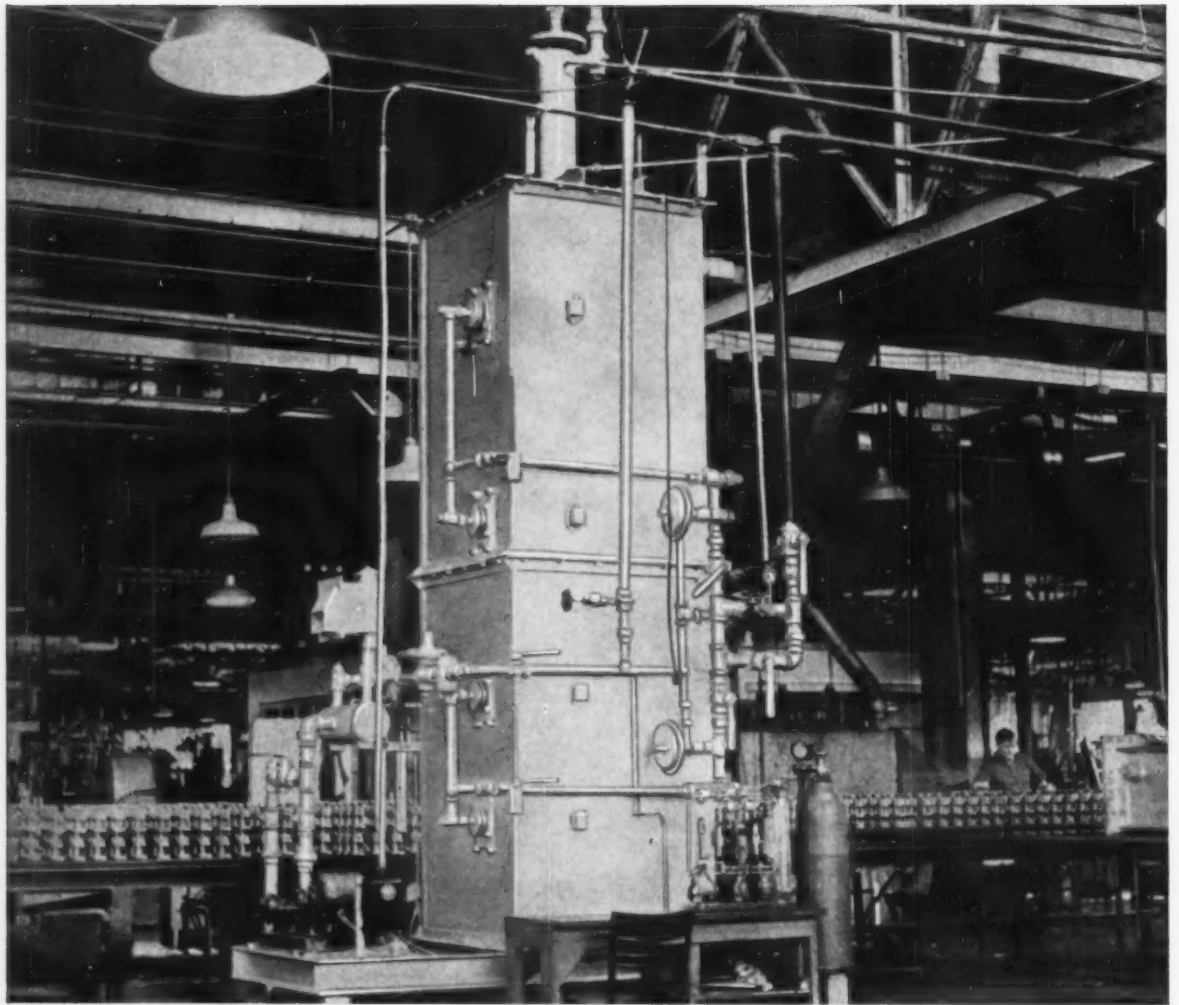
Ironsides engineers are prepared to "custom tailor" lubricants for the specific conditions and preferences of the individual mill. We will supply these specialized lubricants in any quantity from pail to tank car.

If you have a problem, our engineers would like to help you lick it. Their experience is at your service, without obligation. Address, or phone, The Ironsides Company, Columbus 16, Ohio.









## 1,500,000 cfh of atmosphere

That's the combined capacity of all the Surface RX<sup>®</sup> gas generators sold since this first one started operating April 4, 1941. This was the first practical catalytic gas generator for continuous bright gas carburizing . . . and it's still in use at Warner Gear Division, Borg-Warner Corp.

Such long-term reliability is only one of the reasons why so many plants standardize on Surface gas generators. Controllability, flexibility, turn-down operation, variety of gases and capacities are some of the other reasons. We'll be happy to tell you more about them.

SEND FOR BULLETIN SC-155 • SURFACE COMBUSTION CORPORATION • 2373 DORR ST., TOLEDO 1, OHIO

Surface<sup>®</sup> Heat Treat, Steel Mill, Glass Divisions • Kathabar<sup>®</sup> Air Conditioning Division • Janitrol<sup>®</sup> Aircraft-Automotive Division • Janitrol<sup>®</sup> Heating & Air Conditioning Division • Webster Engineering Company: Boiler Burner Division



# FREE TECHNICAL LITERATURE

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

This section starts on p. 273.

## Acoustical sheet

A new 6-page 3-color bulletin illustrates and explains the usual method of applying perforated metal sheets to the construction of acoustical ceilings, side walls and enclosures. It also illustrates many patterns now available in design-strengthened perforated metal sheets, both ferrous and nonferrous. *Diamond Mfg. Co.*

For free copy circle No. 16 on postcard

## Coatings

"Stop Costly Metal Destruction" reads the headline on a new four-page illustrated catalog. Information is included on heat-proof protective coatings designed to protect metals from scaling and corrosion at temperatures as high as 2100°F.; for carburization and decarburization control during heat treating; protection against acids, alkali, salt spray and severe weather conditions. Four basic coating types are described. *Markal Co.*

For free copy circle No. 17 on postcard

## Flexible shaft unit

Grinding, sanding, polishing, buffing, wire brushing, sanding wood, and drilling in steel or wood can be done with attachments by the 1/4-hp multi-speed or single speed flexible shaft machines illustrated in a new catalog. These machines are available with truck, pedestal, bench, and suspension type mountings. This new catalog also lists a line of accessories, flexible tool shafts, power drive shafts, and drill shafts. *Stow Mfg. Co.*

For free copy circle No. 18 on postcard

## Plant location

As most business magazine ad readers know, one particular state in the nation is the "Crossroads of the East." However, others know it best as "in the middle of America's money belt." Currently available are publications explaining these titles. They tell why the Garden State (primarily industrial) is a good place to locate a new plant. Some advantages listed: (1) nearness to major markets ("Nowhere in the world is so much buying power concentrated in one place"), (2) a friendly attitude toward industry (low taxes, no state income tax, no sales tax), (3) uncongested, (4) natural resources (pure water, power, fuel, gas, coke, coal), (5) good labor supply, (6) transportation facilities (two of the world's largest ports), 14 railroads, 100 air terminals, huge highway setup, and (7) good living conditions. *Conservation & Economic Development Dept., State of New Jersey.*

For free copy circle No. 19 on postcard

## Fire Checks

Containing a dozen pages, a bulletin now available describes the operation and construction of automatic fire checks. These detect, localize and extinguish flashback in mixture supply line, where a combustible mixture of fuel gas and air is distributed to heating equipment, safety blowouts which prevent flashback and relieve excessive flashback pressure in combustible mixture main supply piping are also covered. These units are used in a manner analogous to that of fuses and circuit breakers in electrical supply lines. *Selas Corp. of America.*

For free copy circle No. 20 on postcard

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 1/3/57

Circle numbers for Free Technical Literature or Information on New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....  
 Page ..... Product .....  
 Page ..... Product .....

Your Name .....  
 Title .....  
 Company .....  
 Co. Address .....  
 City ..... Zone .....  
 State .....

FIRST CLASS  
 PERMIT No. 36  
 (Sec. 349 P.L. 88.)  
 New York, N. Y.

BUSINESS REPLY CARD  
 No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77  
 Village Station  
 NEW YORK 14, N. Y.

### Diamond abrasives

A 28-page manual, "The Technology of Precision Lapping" is now available. It describes the use of fine diamond abrasives and accessories required for their use in precision lapping. It tells how to improve production by obtaining proper lapped finished surfaces for cutting tools, dies, gages, precision wear parts, etc. Pure, precision graded, fine diamond powders, prepared in scientifically controlled compound form, are illustrated. Also, 12 standard grit sizes are described and are said to insure the selection of the proper grit to start with and the necessary sequence of grits to follow to produce satisfactory predetermined known end results. *Penn Scientific Products Co.*

For free copy circle No. 21 on postcard

### Multivolt recorder

Millivolt recorders are described in a four-page data sheet now available. Specifications of these Speedo-max G recorders are given. Features are tabulated and ordering instructions are included. The instruments described are: stocked 0 to 10 millivolt recorders; one, two and three cycle dc logarithmic recorders; instruments with zero suppressed or zero elevated ranges; a medium high impedance recorder operating with a source resistance as high as one megohm; and a low level dc microvolt recorder with a minimum span of 400-microvolts. *Leeds & Northrup Co.*

For free copy circle No. 25 on postcard

### Brightener

A new powder for single-dip brightening, is described in new reading matter. The one-dip powder is designed to passivate and give a uniform appearance with brightness to cadmium plated work where brighteners are used in the bath. The result is a clear, white metallic color without the yellowish hues usually associated with chromic acid bright dips on cadmium, on baths with or without brighteners. *The Conversion Chemical Corp.*

For free copy circle No. 26 on postcard

### Coating process

A new production process for coating metals, ceramics, wood and other materials is covered in literature now available. It explains a method of using a fluidized bed of finely divided powders in the operation. Data is offered on several powders and resins, their characteristics and properties and chemical resistance. *Polymer Processes, Inc.*

For free copy circle No. 22 on postcard

### Switch parts

Beryllium copper's use in making electric range switches is covered in a technical bulletin. It explains how a manufacturer slashed his product's size 25-pct by using this material. Photographs and text explain the entire procedure. *The Beryllium Corp.*

For free copy circle No. 23 on postcard

### Work gloves

Job fitted industrial work gloves are covered in a 16-page color catalog. Many types of gloves are illustrated and their applications explained. A chemical resistance chart shows how gloves of various materials stand up under many chemicals. *Edmont Mfg. Co.*

For free copy circle No. 24 on postcard

### Application engineering

A complete application engineering service aimed at reducing materials handling costs is offered by a producer of electric fork trucks and related materials handling equipment. Under the plan, an installation engineer personally surveys a plant or warehouse. In collaboration with an extensive staff of materials handling engineers, he then thoroughly analyzes the information. When equipment in use is found to be adequate to do the job, he recommends changes in materials handling procedures. If new equipment is called for, specific types of trucks and attachments are proposed. Reading matter describes this service. *Lewis-Shepard Products, Inc.*

For free copy circle No. 27 on postcard

**BUSINESS REPLY CARD**  
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

**THE IRON AGE**

Post Office Box 77

Village Station  
NEW YORK 14, N. Y.

FIRST CLASS  
PERMIT No. 38  
(Sec. 349 P.L.R.)  
New York, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 1/3/57

Circle numbers for Free Technical Literature or Information on New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

If you want more details on products advertised in this issue fill in below:

Page	Product
Page	Product
Page	Product

Your Name

Title

Company

Co. Address

City

Zone

State



# NEW

## KAYDON THIN SHELL

NEEDLE BEARINGS

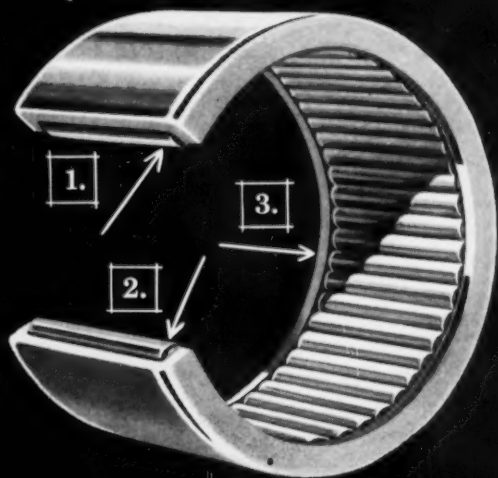
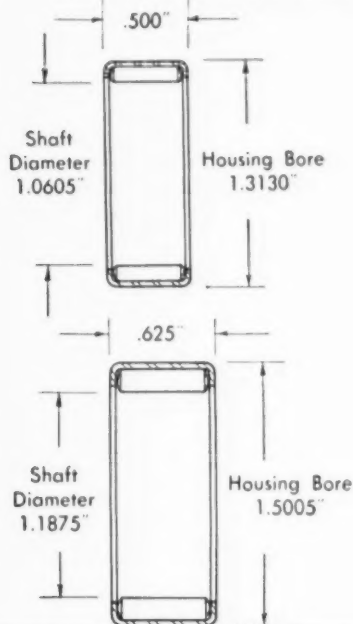


Illustration is 2-times actual size of needle bearing

Two standard sizes  
available from stock



You get these Kaydon design advantages:

1. Greater effective length needle rollers for **MORE CAPACITY** (41% on  $\frac{1}{2}$ " width) ... **LONGER LIFE** (2.8 times as much on  $\frac{1}{2}$ " width)
2. Simplified construction that **SAVES** you money
3. Pre-packed lubrication that **SAVES** assembly time.

**These new thin-shell bearings were developed with the co-operation of the FORD MOTOR COMPANY for use in FORD-O-MATIC and MERC-O-MATIC automatic transmissions**

Kaydon's new thin-shell needle bearing gives more of everything — *more economy . . . more capacity . . . plus longer life* than any other comparable bearing. That's because of Kaydon's greater effective length of spherical end rollers.

This new bearing is ready for you right now from stock in two standard sizes (illustrated). Other sizes will be available later.

For complete specifications, ask for Data Sheet No. K562 — write, call or wire Kaydon of Muskegon.

**THE KAYDON**  
MUSKEGON • MICHIGAN

**ENGINEERING CORP.**

All types of ball and roller bearings — 4" inside diameter to 124" outside diameter ... Taper Roller • Roller Thrust • Roller Radial • Bi-Angular Roller • Spherical Roller • Needle Roller • Ball Radial • Ball Thrust Bearings

January 3, 1957

275

# EF FURNACES

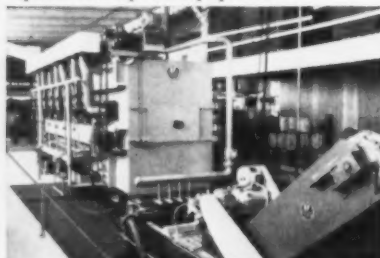
**For Carbonitriding  
Carbon Correction  
Carburizing**

**Non-Decarb, Scale-Free  
Hardening and other  
Processes,  
175 to 2000 lbs. per hour**



EF Gas Fired Radiant Tube Combination Hardening and Dry Cyaniding Unit Fitted with an Automatic Feeder that Distributes the Parts Evenly on the Chain Belt Conveyor; and a Dual Quench.

The EF chain belt conveyor furnace is one of the most satisfactory continuous heating units yet devised for treating small and medium size parts. The material is loaded onto cast link conveyor belt; carried through the furnace; heated uniformly to proper temperature; automatically quenched and discharged. No pans or trays are needed. Hundreds in daily operation prove the dependability and efficiency of our design. Gas, oil or electrically heated. Furnished complete with any desired feeding, discharging or special atmosphere equipment.



The Conveyorized Partitioned Dual Quench Moves Laterally to Permit either the Complete Oil or the Water Quenching Equipment to be Positioned under the Sealed Furnace Discharge.

**BULLETIN No. 461**  
shows typical installations  
of EF Gas-fired, Oil-fired  
and Electric Furnaces  
Send for a copy today!



**THE ELECTRIC FURNACE CO.**

*Salem - Ohio*  
GAS-FIRED, OIL-FIRED AND ELECTRIC FURNACES  
FOR ANY PROCESS, PRODUCT OR PRODUCTION

Canadian Associates  
CANEFECO LIMITED • Toronto 1, Canada

Trade association executives are counting on another good year . . . Industries expand to catch up with demand.

## REVIEW | FORECAST

# Industry Leaders See Markets Holding Up

## Aluminum:

**Aluminum supply in '56  
catches up with demand.**

D. M. White  
Secretary  
The Aluminum Assn.

The year 1956 was one in which the aluminum industry, through its continuing program of expansion, brought supply of the metal up to the level of demand. As a result, aluminum now is freely available for many new uses.

Despite losses in the second half of the year due to strikes, U. S. primary aluminum production in 1956 reached an estimated 3,365,000,000-lb or about 7.5-pct over the record primary production in 1955. This will be the fifth year in succession that the industry has set a new primary production record.

Elimination of stockpile calls eased the aluminum supply situation considerably during the year. By the end of 1956 the Office of Defense Mobilization had reduced its acquisition of the metal by a total of 1,300,000,000-lb. With minimum aluminum stockpiling objectives attained, the ODM has announced that there will be no stockpile call for the metal in the first half of 1957, thereby making the total supply available to industry.

Shipments of almost all classes of semifabricated aluminum products were at higher levels in 1956 than in the previous year. Statistics compiled by the U. S. Bureau

## WHAT'S AHEAD

Trade association executives report on outlook in these fields:

	Page
Aluminum	276
Air Conditioning	316
Brass and Copper	277
Cranes	312
Conveyors	279
Cutting Tools	279
Electronics	280
Ferrous Scrap	280
Forging	308
Freight Cars	284
Furnaces	285
Gas Appliances	317
Gears	286
Gray Iron	310
Handling	288
Heat Treating	288
Instruments	290
Investment Castings	290
Iron Ore	310
Lead	290
Machine Tools	240, 242
Magnesium	316
Malleable	292
Metal Lath	308
Metal Powder	292
Nonferrous Scrap	294
Porcelain Enamel	294
Power	294
Rail Steel	314
Scales	296
Shipbuilding	296
Stampings	296
Steel Castings	298
Steel Containers	300
Tooling	302
Truck-Trailers	304
Welding	304
Zinc	306

of the Census show an 8.1-pct increase in total shipments of wrought products during the first nine months of the year compared with the same months of 1955. The Bureau's figures show shipments of sheet and plate up 9.4-pct; extruded shapes up 6.2-pct; rolled structural shapes, rod and bar up 12.3-pct; and forgings up 8.1-pct. Marked increases have been registered in shipments of aluminum wire and cable for electrical use, the nine-month totals showing ACSR (aluminum cable, steel reinforced) and bare cable up 21.3-pct, bare wire up 77.4-pct and insulated wire and cable up 49-pct over the corresponding months of 1955. These figures reflect an increasing realization of the economic advantages of aluminum in this field. Shipments of aluminum foil in 1956 continued at about the same record-breaking level as in 1955. Aluminum casting shipments also were at about their 1955 levels.

Production of aluminum ingot from scrap continued at a high level in 1956. Figures compiled by the U. S. Bureau of Mines showed the production during the first half of the year about 2 pct over the same period of 1955.

## Brass and Copper:

**Moderate downturn to reverse . . . '57 shipments to increase.**

C. H. Pihl  
Secretary

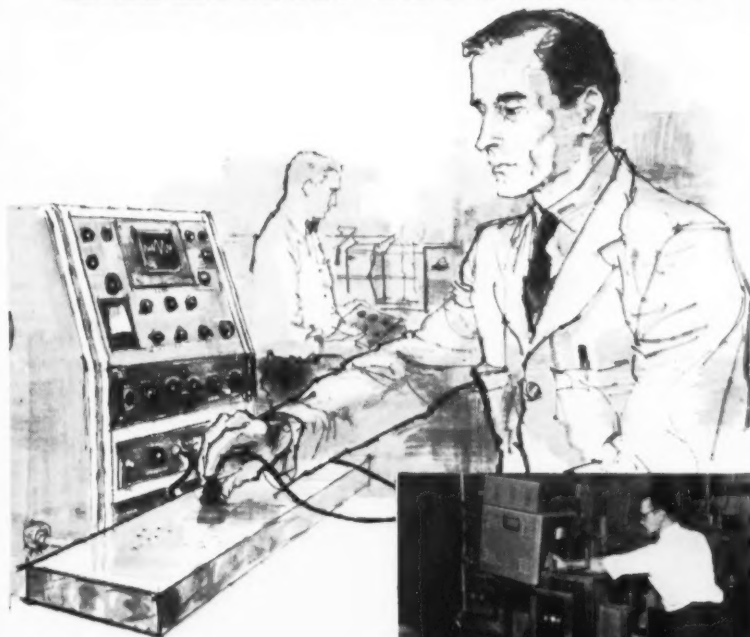
Copper & Brass Research Assn.

Chief causes of 1955's moderate downturn in brass mill shipments were the declines in automotive production and in home building. However, the predicted increase in auto making, along with general encouraging prospects for the nation's economy during 1957, bodes well for an improved year.

The copper and brass mill in-



## IS YOUR PLANT USING THE MOST MODERN INSPECTION TECHNIQUES?



Sperry Ultrasonic Reflectoscopes are found in the modern metallurgical laboratories of leaders in the metals industry. The Ultrasonic UW Reflectoscope is a new research tool that has proved its reliability and usefulness in the search for closer quality control . . . for new and better materials. Ultrasonic waves probe deep inside steel . . . nonferrous metals . . . ceramics . . . plastics—revealing even the smallest flaws and hidden internal defects. The Reflectoscope not only locates these flaws—it also determines their approximate size! In addition, it can even be used to determine elastic properties.

Does your laboratory have the latest, most efficient ultrasonic research equipment? Write today for complete information on the Sperry Ultrasonic Reflectoscope—a reliable testing method for most metals!

To keep posted on latest developments in the profitable use of ultrasonic inspection, send for your free copy of our Ultrasonic Inspection News Letter. Write to:

301 Shelter Rock Road Danbury, Connecticut



# sperry products INC.

FIRST IN ULTRASONIC INSPECTION

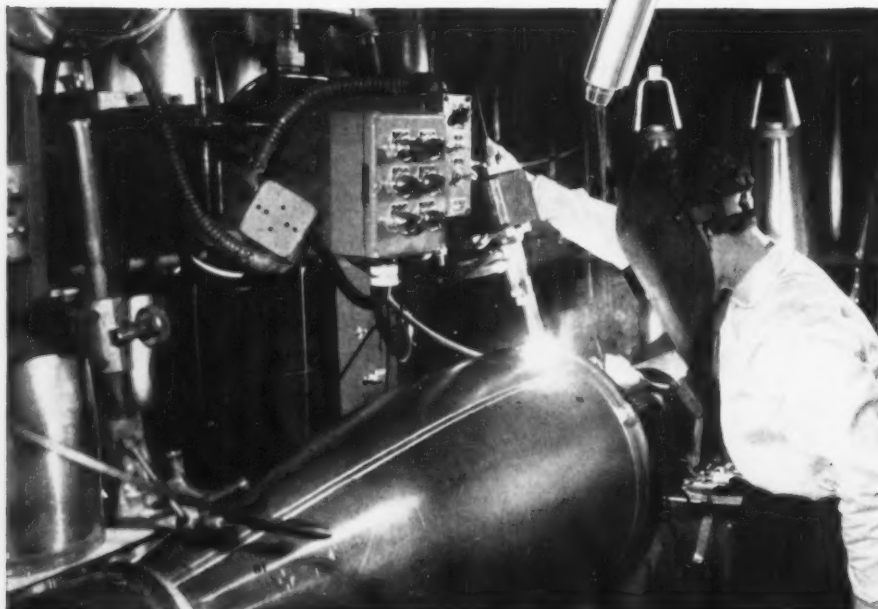


*Automatic Ultrasonic Inspection of continuously produced steel strip and welded tube is one of the most recent Reflectoscope inspection techniques brought from laboratory to production line.*



*Regular Maintenance Inspection of production equipment, like this extrusion press, is a valuable extra duty which many owners assign to their Reflectoscope when the instrument is not required for lab and production tests.*

# New **AIRCOMATIC<sup>®</sup> HEAD** for better machine welding



New AMH-B Head welding cylindrical containers on a high production basis. All components of this Aircomatic package — power supply, inert gases, and Aircomatic welding wire — are available from Airco.

The new improved Airco AMH-B Aircomatic Head has been developed for the fabrication of ferrous and non-ferrous metals on a high production basis. Used in conjunction with constant arc voltage power supply, this unit provides automatic control of the arc voltage. Standard shielding gases—argon, helium, mixtures (AG75) and CO<sub>2</sub> — are used. Advantages of the AMH-B include: two speed ranges, up to 900 inches per minute high range, and up to 600 inches per minute low range; all types of Aircomatic

welding wire, from .030" to 3/32" diameters, can be used.

Wire is fed at a constant speed by an adjustable speed motor. Easy adjustment of the head allows it to be used vertically or horizontally.

For handling most applications the basic package consists of the Aircomatic unit, a machine barrel and a wire guide component kit. The basic Aircomatic unit includes the head, main control panel and remote control operator's station. For complete information write Airco direct.

*welding*  
AT THE FRONTIERS OF PROGRESS YOU'LL FIND...



Offices and dealers in  
most principal cities

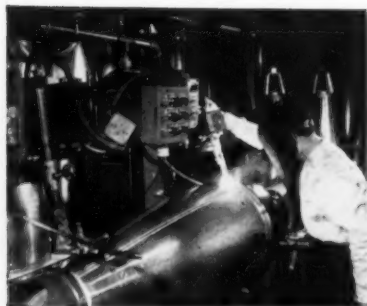
## **AIR REDUCTION SALES COMPANY**

A division of Air Reduction Company, Incorporated  
150 East 42nd Street, New York 17, N. Y.

On the west coast —  
Air Reduction Pacific Company  
Internationally —  
Airco Company International  
In Cuba —  
Cuban Air Products Corporation  
In Canada —  
Air Reduction Canada Limited

Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO** — industrial gases, welding and cutting equipment, and acetylenic chemicals • **PURECO** — carbon dioxide, liquid-solid ("DRY-ICE") • **OHIO** — medical gases and hospital equipment • **NATIONAL CARBIDE** — pipeline acetylene and calcium carbide • **COLTON** — polyvinyl acetates, alcohols, and other synthetic resins.





## Note these outstanding advantages of the new AMH-B

- Accommodates wide range of metal thicknesses — take fine wires (.030") for thin gauges, and up to 3/32" for normal gauges.
- Versatility — through availability of 3 machine barrels with duty ratings of 350, 500 and 600 amperes.
- Extreme compactness contributes to ease of installation, setting up, and servicing.
- Designed so that accessory equipment may be connected easily, quickly.
- Easy to mount: only standard 1½" steel pipe is required.
- Can be used with argon, helium, mixtures (AG 75) and CO<sub>2</sub> gases.
- Simplified design means easier maintenance and longer life.

You'll find the new AMH-B Aircomatic Head ideal for high quality welding on production type applications. For complete details



WRITE DIRECT

TO

**AIRCO**

dustry will continue to improve its fabricating facilities and products. This assures that the supply of copper and brass mill products will be adequate to meet future demands.

Moreover, the copper supply situation appears very bright. Both domestic and other free world copper production have shown substantial increases. Present figures indicate that copper mining capacity will continue to grow here and overseas, year by year, for some time to come.

## Conveyors:

**Outlook excellent . . . Big question: can record '56 be topped?**

R. C. Sollenberger  
Executive Vice President  
Conveyor Equipment Manufacturers Assn.

The conveyor industry expects 1957 to be an excellent year. It is questionable, though, if the record-breaking 1956 pace can be maintained. A general feeling is that the first half will justify considerable optimism; chances are excellent for a satisfactory volume throughout the whole year.

Both shipments and new orders in 1956 have run well ahead of 1955 and somewhat ahead of predictions made a year ago. Conveyor shipments for 1956 should total about 310-million dollars on the basis of the first nine months. For 1957, it seems likely that the total will be around 300-million dollars.



"Smith, on behalf of the Safety Council . . ."

## WHAT'S AHEAD

A moderate expansion of manufacturing facilities has taken place in the past year and there is some planned for 1957. Should there be an unexpected increase in the volume of business, the conveyor industry can handle it for a limited period by the addition of extra shifts.

### Passenger Conveyors Coming

There are many municipalities considering plans for passenger conveyors in efforts to end pedestrian congestion in downtown areas. Commercially, passenger conveyors will be found soon in super-market areas to aid shoppers to and from super-parking lots.

## Cutting Tools:

**Industry looks forward to continued growth.**

L. H. Skoglund, Jr.  
President  
Cutting Tool Manufacturers Assn.

The cutting tool industry is looking forward to continued growth to keep pace with the expansion of metalworking plants and facilities. Business volume in 1956 was ahead of 1955 and present expectations are for a further increase in volume of business for the year 1957 for the industry as a whole.

The cutting tool industry is basic to our production economy. Our highly engineered and mechanized production methods require constantly increasing investment in machine tools and the various cutting tools required to manufacture metal products.

### Higher Speeds, Feeds

Higher speeds and feeds are becoming available as horsepower on machine tools increases. Automation increases the cost of capital investment and consequently any idle time required for tool changes or tool failure becomes increasingly expensive.



## Electronics:

**Radio-television-electronics suffers only growing pains.**

J. D. Secrest  
Executive Vice President  
Radio-Electronics-Television Manufacturers Assn.

The radio-electronics - television manufacturing industry continued its over-all production growth in 1956 but suffered some rather acute growing pains in the process.



The upward trend that the industry has followed since the outbreak of the Korean War did not waver. Intense competition in the commercial market resulted in the disappearance of several well known brand names among TV set manufacturers. Similarly, the number of component producers decreased via mergers, sales or bankruptcies.

The television receiver business appeared to have reached what the big money quiz shows call "the first plateau" during the year. However, despite a decline of about 9-pct in production from 1955, the year seemed likely to end as one of the four best with sales of more than 7,000,000. Radio, whose demise was forecast with the arrival of television, ran counter to the TV trend and made substantial gains over 1955.

The greatest strides were made in the industrial electronics market, however, while the procurement of electronic military gear edged upward and seemed likely to continue to rise in 1957. The industry's over-all dollar volume in 1956 will be about 15 pct greater this year than last.

The size of the electronics industry, measured in terms of production and sales, approached \$5.9-billion this year at the factory level and almost twice that figure when distribution, servicing, and broadcasting revenue are added. Next year another 10-pct in growth is expected. Industry statisticians predict the entire income of the

electronics industry will reach \$22-billion by 1966.

Television, which is the glamour product of the electronics industry, leveled off in both production and sales in 1956. Approximately 7.1-million black and white TV sets will have been manufactured by the end of this year as against 7.7-million in 1955. However, this decline was partially offset by sales of color television receivers at three times or more the price of the average monochrome set. No authoritative figures are available on color TV set sales, but industry estimates range between 150,000 and 200,000 units.

## Ferrous Scrap:

**First half will be best . . . consumption may drop.**

E. C. Barringer  
Executive Vice President  
Institute of Scrap Iron & Steel

Consumption of purchased scrap by domestic consumers in 1956 is approximately 36 - million gross tons. Exports are about 5-million-tons, or a total of 41-million-tons. Domestic consumption was 34.5-million-tons of purchased scrap and exports of 4.5-million-tons in 1955. The scrap industry handles 95-pct of this tonnage. The increase over 1955 is about 5-pct.

Steel mill and foundry operations next year should be about the same or slightly less than this year. The first half-year will probably be better than the second half. Perhaps the peak of the year will be reached in the second quarter. Estimated domestic consumption of scrap next year will be perhaps 5-pct below this year; exports will be off about 10-pct, perhaps a little more.

From the technical standpoint, 1956's biggest development was the installation of many super-presses. Some of these are big enough to take an entire automobile from bumper to bumper (including the engine block and drive shaft) and, in less than a minute, compress it into a bundle.

If anything was outstanding in 1956 it was the appetite of friend-



**MEEHANITE CASTINGS ARE MADE ONLY BY MEEHANITE FOUNDRIES**

The American Laundry Machinery Co., Rochester, N. Y.  
Atlas Foundry Co., Detroit, Mich.  
Banner Iron Works, St. Louis, Mo.  
Barnett Foundry & Machine Co., Irvington, N. J.  
Blackmer Pump Co., Grand Rapids, Mich.  
Centrifugally Cast Products Div., The Shenango Furnace Co., Dover, Ohio  
Compton Foundry, Compton, Calif.  
Continental Gin Co., Birmingham, Ala.  
The Cooper-Bessemer Corp., Mt. Vernon, Ohio and Grove City, Pa.  
Crawford & Doherty Foundry Co., Portland, Ore.  
Delaval Steam Turbine Co., Trenton, N. J.  
Empire Pattern & Foundry Co., Tulsa, Okla.  
Florence Pipe Foundry & Machine Co., Florence, N. J.  
Fulton Foundry & Machines Co., Inc., Cleveland, Ohio  
General Foundry & Mfg. Co., Flint, Mich.  
Georgia Iron Works, Augusta, Ga.  
Greenlee Foundry Co., Chicago, Ill.  
The Hamilton Foundry & Machine Co., Hamilton, Ohio  
Hardinge Company, Inc., New York, N. Y.  
Hardinge Manufacturing Co., York, Pa.  
Johnstone Foundries, Inc., Grove City, Pa.  
Kanawha Manufacturing Co., Charleston, W. Va.  
Kennedy Van Saun Mfg. & Eng. Corp., Danville, Pa.  
Koehring Co., Milwaukee, Wis.  
Lincoln Foundry Corp., Los Angeles, Calif.  
Mattison Machine Works, Rockford, Ill.  
Palmyra Foundry Co., Inc., Palmyra, N. J.  
The Henry Perkins Co., Bridgewater, Mass.  
Pohlman Foundry Co., Inc., Buffalo, N. Y.  
The Prescott Co., Menominee, Michigan  
Rosedale Foundry & Machine Co., Pittsburgh, Pa.  
Ross-Meehan Foundries, Chattanooga, Tenn.  
Sonith Industries, Inc., Indianapolis, Ind.  
Standard Foundry Co., Worcester, Mass.  
The Stearns-Roger Mfg. Co., Denver, Colo.  
Valley Iron Works, Inc., St. Paul, Minn.  
Vulcan Foundry Co., Oakland, Calif.  
Washington Iron Works, Seattle, Wash.  
Dorr-Oliver-Long, Ltd., Orillia, Ontario  
Hartley Foundry Div., London Concrete Machinery Co., Ltd., Brantford, Ontario  
Otis Elevator Co., Ltd., Hamilton, Ontario



**SEND FOR  
FREE  
BULLETIN 41  
TODAY**

Meehanite Metal as a Material for Forming & Stamping dies

Write today to Meehanite Metal Corporation, Dept. 1A, 714 North Avenue, New Rochelle, N. Y.

**MEEHANITE®**



## Increase die life and lower production costs with cast-to-form Meehanite metal dies

Longer service life is obtained with Meehanite dies because of their better wear resistance and freedom from galling, scuffing and scoring. Meehanite metal, combining the most desirable properties of gray iron and steel, is one of the most versatile die materials available.

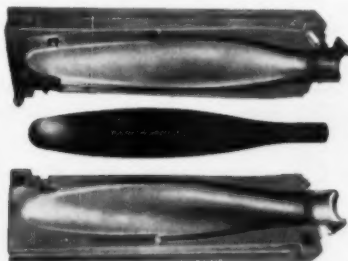
Meehanite dies provide high strength and toughness combined with ex-

cellent self-lubricating properties. Dies made in Meehanite metal take on a permanent glass-smooth finish and assure long runs of flawless pressings and shapes. Meehanite dies are used successfully for deep drawing and shaping all steels and non-ferrous alloys.

Substantially lower production costs are achieved by casting large and

complicated die parts in one piece rather than building up die assemblies. Machining allowances are held to a minimum and dies may be hardened by local or uniform heat treating without distortion.

*For additional information, send for Bulletin No. 41 "Meehanite Metal as a Material for Forming & Stamping Dies."*



Steel airplane propeller blades that must be as near perfect as possible are manufactured with Meehanite dies that prevent distortion during quenching after heat treating. The dies shown contain cored passages through which cooling water flows.



Meehanite dies have been used in drawing and forming operations for over 25 years by the Ingersoll Products Division of Borg-Warner Corporation in the manufacture of stampings for the automotive, farm equipment and home appliance industries.

MEEHANITE BRIDGES THE GAP BETWEEN CAST IRON AND STEEL<sup>®</sup>

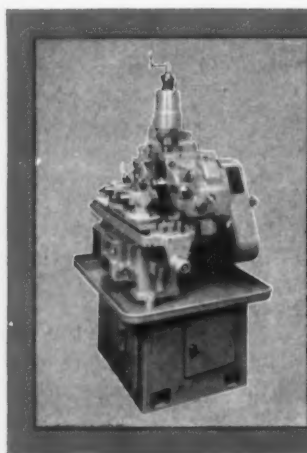
# MEEHANITE METAL

MEEHANITE METAL CORPORATION, NEW ROCHELLE, NEW YORK

# Outlook for Cost of Production

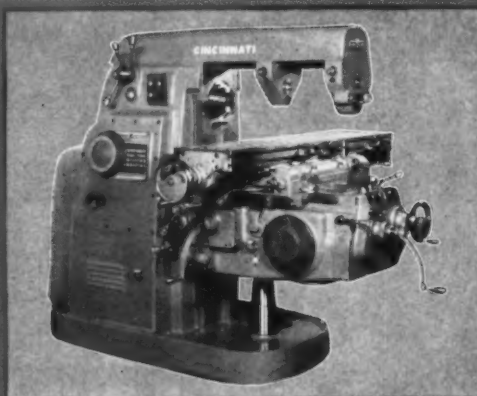
Your Costs Can be Sharply Reduced with....

## Cincinnati Engineering Service Cincinnati Milling and Broaching



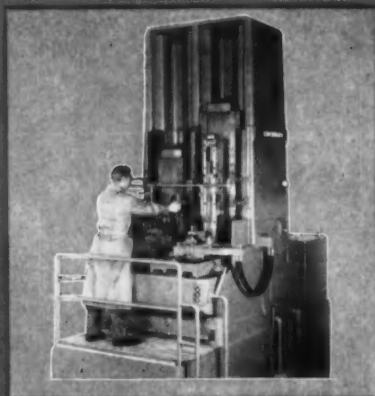
### CINCINNATI O-8 Plain Automatic Milling Machines

...are built with automatic rise and fall spindle carrier (as illustrated) and without this feature. There are 16 table feeds,  $\frac{1}{2}$ " - 20", 1" - 40" or 2" - 80" per minute; table has 400" per minute rapid traverse; 20 spindle speeds, 80 to 3000 rpm. Complete operating cycle functions automatically, started with one lever. Want more information? Write for catalog No. M-1607-2.



### CINCINNATI Dial Type Milling Machines . . .

are heavier and more powerful than ever before. All sizes (Nos. 2, 3, 4) are available in Plain, Universal and Vertical styles. 24 spindle speeds; 32 feeds,  $\frac{3}{8}$ " - 90" per minute. All are equipped with Automatic Backlash Eliminator; power speed and feed changes at front and rear operating positions; Dynapoise overarm; motor driven cutting fluid pump; feed drive motor mounted on the knee; push-button spindle speed change and spindle start-stop. Plain and Vertical Machines are available with or without Automatic Table Feed Cycles. Complete specifications may be obtained by writing for catalog No. M-1915-1.



### CINCINNATI Vertical Hydro-Broach Machines...

handle an ever-increasing variety of high production work accurately and economically. Built in single ram and duplex (illustrated) styles, both have automatically receding tables, timed with reversal of ram movement. Ways are hardened and ground, automatically lubricated. Broach holders are interchangeable. There are seven sizes of each style, Nos. 1-30 to 10-66. Catalogs No. M-1745 for the Single Ram; No. M-1848 for the Duplex.

MILLING MACHINES • BROACHING MACHINES • CUTTER AND TOOL GRINDERS • METAL FORMING MACHINES



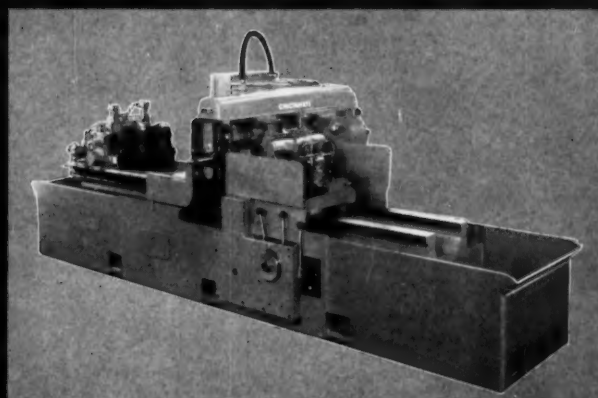
# This Year!



## and New Machines

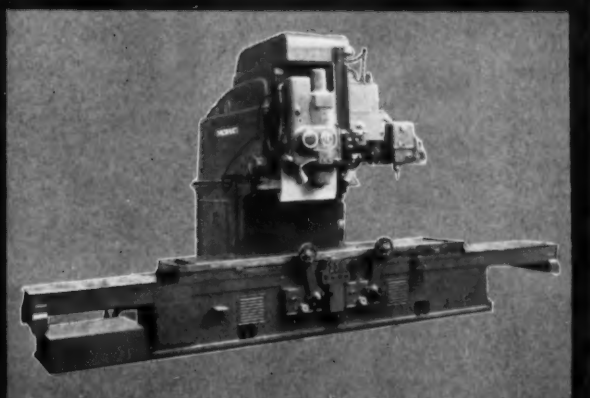
Your excess production costs can be accurately determined by comparing the performance of your present metalworking equipment with new CINCINNATI® Milling and Broaching Machines. You'll be agreeably surprised at the big savings you can make in production costs and maintenance charges . . . and at the closer precision obtained. Cincinnati's Engineering Service can help you apply the correct method, tooling and machine for your work. This engineering "know how" combined with a wide range of types and sizes of CINCINNATI Milling and Broaching Machines, gives you an opportunity to forecast a much better outlook for your business. Why not get in touch with us today. For brief specifications of the machines illustrated and the many other sizes and types available, look in the latest issue of Sweet's Machine Tool File, or write for our new general catalog, publication No. M-1961.

THE CINCINNATI MILLING MACHINE CO.  
CINCINNATI 9, OHIO



### CINCINNATI HyPowermatic Plain and Tracer Controlled Milling Machines . . .

for heavy duty production milling operations are built in Plain (illustrated) and Duplex styles and 42 sizes of each from 36" to 168" table traverse; up to 50 hp spindle drive and separate 5 hp feed drive; built-in Backlash Eliminator. Tracer controlled machines combine heavy duty tracer controlled milling with all the conventional milling operations assignable to Plain and Duplex HyPowermatics. Simple sheet metal templates are attached to the fixture or table. Profiles having curvatures and straight lines at angles up to 80° from the horizontal can be accurately milled. Want more information about the HyPowermatics? Complete specifications may be obtained by writing for catalog No. M-1909-1.



### CINCINNATI 30" Vertical Hydro-Tel Milling Machine . . .

for shops requiring large, rangy vertical millers having 20 hp spindle drive. Can be equipped for die sinking and/or profile milling. Power feed rates infinitely variable. Power changes of spindle speeds with selector switch and dial type speed indicator. All controls are conveniently grouped at the front of the machine, and easily reached from operating position. Available in three bed lengths to provide table travel of 60", 96" or 120". Catalog No. M-1923-1.

# CINCINNATI

HARDENING MACHINES • OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID • GRINDING WHEELS

# WHY MONARCH lathe head stocks are MICROHONED

Monarch Machine Tool Company Microhones the spindle bores in its lathe head stocks because Microhoning . . . generates consistent finish, size, and alignment of bores . . . corrects out-of-roundness . . . eliminates cost of line-reaming operations . . . permits interchangeability of spindles and bearings.



And with the use of a new three-diameter Microhoning tool, honing time is reduced approximately 40% over former method which employed two double-diameter tools. One set-up now replaces multiple set-ups previously required.

## APPLICATION DATA:

STOCK REMOVAL  
.003" to .004"

TOLERANCES  
diameter..... .0002"  
roundness..... .0001"  
taper..... .0001"

FINISH... 20-25 microinches

PREVIOUS OPERATION  
line boring

3 IN-LINE BORE SIZES  
4.125" dia. x 1.500" long  
5.118" dia. x 1.250" long  
6.299" dia. x 5.125" long

Micromatic tooling for Microhoning applications is constantly furnishing manufacturers with cost reductions, higher production and better functional characteristics. A Micromatic Field Engineer will be glad to discuss your production problems and show you "Why" the proper Microhoning tools will help.

*The principles and applications of Microhoning are explained in a 30-minute, 16 mm, sound movie, "Progress in Precision" . . . available at your request.*

- ☐ Please send me "Progress in Precision" in time for showing on \_\_\_\_\_ (date).
- ☐ Please have a Micromatic Field Engineer call.
- ☐ Please send Microhoning literature and case histories.

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



## MICROMATIC HONE CORP.

8100 SCHOOLCRAFT AVENUE • DETROIT 38, MICHIGAN

## WHAT'S AHEAD

ly foreign nations for American scrap. Europe (the Schuman Plan countries) and Japan experienced a boom in consumer goods and needed much more steel quickly. It was found more expedient in many ways to buy scrap in the U. S. than to expand blast furnace capacity. Exportation of scrap is now entirely a matter of government policy.

## Freight Cars:

**Deliveries up 75-pct . . . 60,000 cars await sufficient steel.**

L. N. Selig  
President

American Railway Car Institute



In terms of delivered freight cars, 1956 was substantially better than the preceding year. Estimated freight cars delivered in 1956 total about 67,000; an increase of about 75-pct over the 37,545 cars produced a year earlier. This favorable situation is largely the result of a flood of orders placed during the last half of 1955; particularly the last two months when orders for more than 90,000 cars were placed. This increase, however, brought with it a number of problems which have plagued, and continue to plague, the industry.

The flood of orders constituted, to a large extent, emergency buying by the railroads after a long period of low orders. One immediate, and foreseeable, result was that sufficient steel was not available even before the steel strike in July 1956 to produce the needed number of freight cars.

This situation worsened when the steel strike came about, and the effects of it still continue. Not an independent car builder in the entire industry is as yet getting anything like the quantity of steel needed to schedule full production, although the strike ended five months ago.

The big question in 1957 is

whether the industry will get sufficient steel to build the 60,000 cars on their order books. The railroad shops, with almost exactly the same backlog, face the same problem, in addition to their car repair work.

The long term prospects should be even better if the railroads get relief from strangling regulations. With the purchasing capacity of the railroads thus improved, and if they then adopt long range and orderly buying practices, a healthier situation will result. This should benefit not only the railroads, but car builders, the steel industry and shippers.

Mr. Selig is chairman of the board, General American Transportation Corp.

## Furnaces:

Orders hit new high . . . Upward trend expected to continue.

Carl L. Ipsen  
Executive Vice President  
Industrial Heating Equipment Association

Orders for industrial furnaces in 1956 are 20-pct higher than in 1955, a record year. Business forecasts indicate 1957 will maintain the 1956 level. Viewed from the standpoint of industrial plant expansion and modernization, this appears to be a conservative estimate.



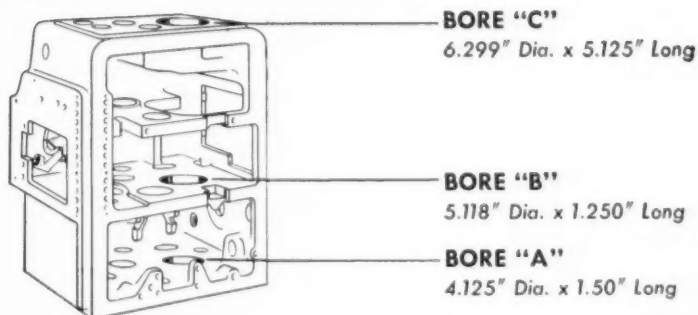
A comparison of industrial furnace orders secured during three post World War II years with orders secured during three corresponding post Korean War years reveals spectacular growth. Average yearly orders during the 1948-50 period came to 31-million dollars. Average yearly orders in the 1955-58 period were 113-million dollars. During that same period the gross national product increased approximately 60-pct compared to the 265-pct increase in the industrial heating business.

Here briefly are some of the reasons for the recent prosperity

# HOW with one set-up MONARCH MICROHONES three bore diameters

Using a three-diameter tool and only one set-up, Monarch Machine Tool Company Microhones three in-line bores in lathe head stocks. Bore diameters are 4.125", 5.118" and 6.299". Stroke of Microhoning tool is changed only once during the working of all three bores. Former method of honing required multiple tooling and set-up.

## How Monarch Microhones:



### FIRST STROKE SETTING

Bore "A" is Microhoned while guiding on Bore "B"  
Bore "B" is Microhoned while guiding on Bore "A"

### SECOND STROKE SETTING

Bore "C" is Microhoned while guiding on Bore "B"

## How This Microhone Tool Operates:

A compound cone in the tool allows any one of the three bores to be Microhoned by expanding or collapsing individual banks of stones and guides. A selector sleeve shifts the cone rod to provide positive control of abrasives and guides.

Micromatic "How" knowledge, obtained through 27 years of experience in designing, engineering and manufacturing of Microhoning equipment for all types of applications throughout the world, can solve your production honing problems.

Learn how Microhoning will give you efficient stock removal, closer tolerances, accurate alignment and functional surfaces.

- ☐ Please have a Micromatic Field Engineer call.
- ☐ Please send Micromatic literature and case histories.



NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_ C

# MICROMATIC HONE CORP.

8100 SCHOOLCRAFT AVENUE • DETROIT 38, MICHIGAN

# Large

or  
small

## INDUSTRIAL CUT GEARS

- FURNISHED COMPLETE
- CUSTOM CUT FROM YOUR BLANKS
- HEAT-TREATED, CASE OR FLAME-HARDENED

SIMONDS GEAR produces a complete line of industrial cut gears in a full range of sizes from cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite. Also heat-treated, case or flame-hardened carbon or alloy steel. Or, you may have your own gear blanks custom cut to your order. Same quality... same prompt service. Send us your requirements for quotation.

ALSO stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.



SPUR GEARS •

BEVEL GEARS • MITRE GEARS

WORMS • WORM GEARS

RACKS

PINIONS



### THE SIMONDS GEAR & MFG. CO.

LIBERTY at 25TH

PITTSBURGH 22, PA.

Quality Gears for over 60 years

#### WHAT'S AHEAD

of the industrial heating equipment industry, a prosperity that gives good promise of being with us for a long time:

1. Mechanization, increased instrumentation for automatic quality control, atmosphere generating equipment, and improved safety devices have increased considerably the unit price of each new installation. This is justified by reduced operating cost and improved quality of heat treated products. These improvements greatly accelerate replacement of obsolescent equipment.

2. Increasing performance standards require heat treatment of parts not formerly heat treated. Good examples are heat treatment of steel plate and surface hardening of automobile rear axles.

3. New metals require special equipment for their melting and heat treatment. Most prominent in this category is titanium which requires vacuum melting and vacuum heat treatment to develop its maximum physical properties.

#### Gears:

Production at highest peak . . .

'57 will repeat or top this.

J. C. Sears

Executive Secretary

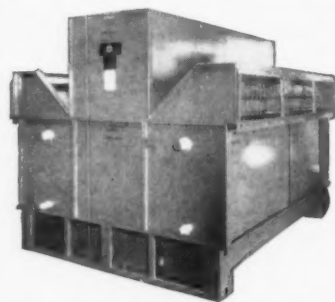
American Gear Manufacturers Assn.

Last year was the biggest on record for gear production. The forecast for 1957 is: equal or better than 1956.

The gear industry is modernizing or replacing equipment that by former standards would have years of useful life remaining.

Users of replacement and original equipment gears are learning that quality rather than price is the controlling factor. Downtime expense is so vast that it offers the greatest single avenue to cost reduction. The "right" gear is the cheapest you can buy, regardless of its cost.

Automation of facilities to pro-



**NIAGARA SECTIONAL  
Aero HEAT EXCHANGER  
gives close temperature  
control, saves you  
LABOR, Power, Water**

- Because the new design improves the heat transfer to the out-door air by evaporation.
- Because new features keep your equipment working for long life with "new plant" efficiency... always full capacity.
- Because you save 95% of cooling water cost.

You get faster, more accurate cooling of industrial fluids to specified temperatures.

You improve your quality of production by removing heat at the rate of input.

You save labor in upkeep. With full access to all interior parts and piping you see everything in easy inspections. You head off dirt accumulation and corrosion. Casing panels are removable without moving the coils. The coils can be cleaned from both sides.

First cost is low; freight is low because of the lowest space/weight ratio; you save much labor in erection. Capacity range is 7,000,000 to 18,000,000 Btu/hr. No other heat exchange method gives you so much saving in money and convenience.

Write for Niagara Bulletin No. 132

**NIAGARA BLOWER COMPANY**

Dept. 1A, 405 Lexington Ave.  
NEW YORK 17, N. Y.

District Engineers in  
Principal Cities of U. S. and Canada



*Square D  
FOR THE  
MOST COMPLETE  
line of Oil-Tight*



Square D pushbuttons, designed to JIC and NMTBA standards, have been proven by severe tests involving millions of operations. They offer still other features...generous wiring space and exclusive "Slide and Swing" enclosure covers for easier, faster installations when machine operations are changed.

# PUSHBUTTONS

## OIL-TIGHT OPERATORS



**Momentary Contact**  
Guarded button in 7 colors.



**Mushroom Button**  
1 1/4" or 2 1/4". Momentary contact. 7 different colors.



**Selector Switch**  
2 or 3 position with 4 different cams.



**Coin-operated Selector Switch**  
Available in same selection as standard type.



**Key-operated Selector Switch**  
Discourages unauthorized operation.



**Selector Pushbutton**  
combines selector switch and pushbutton. 2 or 3 position.



**Padlock Attachment Latch type.** For momentary contact buttons. Locks "OFF" position.



**Padlock Attachment Covertype.** Prevents depressing button.



**Maintained Contact Attachment**  
Used with 2 operators, 1 contact block.



**Selector Switch Lockout**  
Permits switch to be locked in any one of three positions.



**Wobble Stick Operator**  
for momentary pushbutton operator. Ideal for emergency stop with pendant station.



**Neoprene Cap**  
for momentary contact button. Prevents liquids, dust and grit from working into pushbutton operator.

## CONTACT BLOCKS and PILOT LIGHTS



**Single Pole N.O. and N.C. Contacts**



**Duplex N.O. and N.C. Contacts**



**Tandem Operation.** Duplex N.O. and N.C. Contacts with extended stems for combination with another block.



**Duplex N.O. and N.C. Contacts** with one N.O. circuit closing ahead of the other. Designed for 2-speed or sequence operations.



**PILOT LIGHT** • Generous illumination and wide-angle visibility. Greatly reduced filament burn-outs. No loosening of lamp under vibration. Six colors—red, amber, green, blue, white, clear.

You'll like the completeness of Square D's pushbutton line. Every conceivable combination can be obtained with a minimum stock of packaged units. Enclosures available for 1 to 16 units.

**Write for Pushbutton Bulletins which give complete details. Address Square D Company, 4041 North Richards St., Milwaukee 12, Wisconsin.**

**ANY OPERATOR  
WITH ANY  
CONTACT BLOCK**



**NOW...EC&M PRODUCTS ARE A PART OF THE SQUARE D LINE!**



# SQUARE D COMPANY

duce large volume requirements is now growing rapidly. Accuracies now being regularly attained were thought to be impossible less than five years ago.

## Handling:

**Record breaking '57 to follow record breaking '56.**

N. F. Young  
Secretary  
Materials Handling Institute

Material handling equipment sales in 1957 will be 10-pct higher than record breaking 1956. The predicted increase is particularly significant in view of the fact that The Material Handling Institute's monthly bookings index indicates that total bookings for 1956 will be somewhere in the neighborhood of 25-pct higher than the all-time high in 1955.

Estimates of 1957 sales by various manufacturers range from

"the same as 1956" to increases of 15-pct. The average estimate is the 10-pct figure.

Ease of maintenance is receiving top attention of new handling equipment designers. Other trends include easier, faster and safer operation. Additional improvements expected in 1957 will include mechanical and electronically controlled transfer mechanisms, improved dispatch and system controls, more versatile industrial truck and crane attachments.

## Heat Treating:

**Production booming . . . May increase; Expansion "startling."**

H. N. Bosworth  
President  
Metal Treating Institute

The custom or commercial heat treating industry is expanding at a startling rate. This is true both

in dollars invested in capital equipment and buildings, and in sales. The year 1956 was from 25 to 42 pct above 1955, depending upon locality. This means the new year starts off at a very high level of production. From all indications, this pace will maintain or increase during the coming months.

The new models in the automotive field should create added impetus. The effect of Mid East tension should nudge the defense, aircraft and guided missiles industries' production upward.

These effects will spur and advance the developing techniques of vacuum annealing and heat treatment, especially in the field of titanium alloys. Larger and better designed equipment will be greatly expanded for heat treatment of titanium sheet and other fabricated components.

Mr. Bosworth is president, Bosworth Steel Treating Co., Detroit.

## RIGHT LOCATION FOR

**YOUR BUSINESS**—in the geographic center of the World's Richest Market. Whether your market is industry or the consumer, you can serve it best from NEW JERSEY. 52 million people with a net spendable income of 91 billion, live within a radius of 250 miles—overnight delivery.

## RIGHT TAX SET-UP.

New Jersey is one of the few states that has neither state sales tax nor state income tax. Ask your tax consultant to figure how much New Jersey's sensible tax structure could save on both your corporate and personal taxes.

## RIGHT LABOR SUPPLY.

Almost any skill you require can be found here. New Jersey has built up its supply of skilled workers with the most advanced program of vocational education to be found anywhere in the country. Today New Jersey has more industrial workers in relation to its area than any other state. Good living conditions and easy travel help to keep workers contented.

18 million people  
in your front yard  
with a net spend-  
able income of 36  
billion.

# New Jersey

WRITE FOR  
**FREE BOOKLET**

If you have specific questions we can refer you to one of the 100 experts on our Industrial Advisory Board. Inquiries handled in strict confidence.



**New Jersey State Promotion Section I**

520 East State Street, Trenton 7, New Jersey

Division of Planning and Development  
Department of Conservation and Economic Development

**FLEXIBLE DESIGN  
CUTTING ACCURACY  
CONTINUOUS FEED  
RUGGED CONSTRUCTION**

# *Automatic Shears*

**BY**

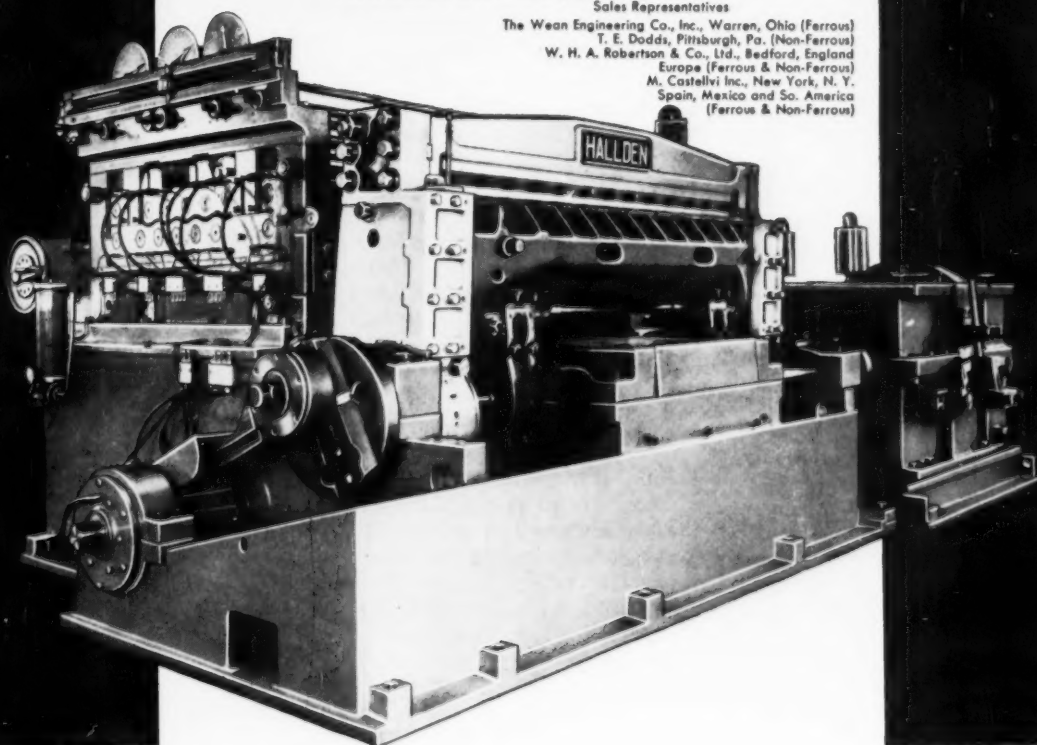
# **HALLDEN**

THE SHEARING SPECIALISTS

**THE HALLDEN MACHINE COMPANY  
THOMASTON, CONNECTICUT**

*Sales Representatives*

The Wean Engineering Co., Inc., Warren, Ohio (Ferrous)  
T. E. Dodds, Pittsburgh, Pa. (Non-Ferrous)  
W. H. A. Robertson & Co., Ltd., Bedford, England  
Europe (Ferrous & Non-Ferrous)  
M. Castellvi Inc., New York, N. Y.  
Spain, Mexico and So. America  
(Ferrous & Non-Ferrous)



## Instruments:

**Scientific apparatus and instrument sales up 15 to 40-pct in '56.**

Kenneth Andersen  
Executive Vice President  
Scientific Apparatus Makers Assn.

The new year finds scientific apparatus and instrument makers holding on to a 15 to 40-pct sales increase scored during 1956. This should be true for the first six months of the new year and does not account for what may happen should a national or international emergency arise.

Outstanding events within the industry during the past year have found apparatus makers one of the paces among industries in terms of the amount of the sales dollar invested for research and development.

## Investment Castings:

**Predict 20-pct sales increase . . . expansion widespread.**

K. W. Thompson  
President  
Investment Casting Institute

Investment casting sales should reach 175-million dollars in 1957. This is about a 20-pct increase over 1956 sales of an estimated 148-million. This prediction is conservative because the increased demand for investment castings in aircraft and in commercial applications may boom sales to 200-million. This would be more than a 100-pct increase over 1953 when industry sales reached 96-million.

### New Users Increasing

This increase will come not only from established customers but from an increasing number of new users. The aircraft industry remains the principal consumer of investment castings. However, commercial applications including electronic equipment, machine tools, business machines, machinery and others are pushing industry sales to new highs.

A recently completed survey

shows that more than half of the investment castings manufacturers have specific plans for expansion of plants, facilities and number of employees. Facilities are expected to expand about 27 pct in square feet of plant space from 1956 to 1957; employees will increase about 21-pct; and number of plants will go up about 9-pct.

Mr. Thompson is president, K. W. Thompson Tool Co., New York.

## Lead:

**Batteries should lead the way to greater consumption in '57**

R. L. Ziegfeld  
Secretary-Treasurer  
Lead Industries Assn.

The lead outlook is encouraging. Storage batteries should consume more lead in 1957 than in 1956. This is based both on the number of cars on the road that will need replacement batteries and the anticipated greater new car production. The latter should also favorably affect solder consumption. An indication of the confidence that tetraethyl lead manufacturers have in the future of their industry is the fact that a new plant in the U. S. started producing in 1956. Additional new plants are planned. However, a new plant in Canada will divert some business from U. S. plants.

Despite setbacks in the automotive and home construction industries in 1956, both substantial consumers, lead consumption is estimated almost equal to 1955. It is probably the third largest year on record. U. S. consumption is an estimated 1,200,000-tons.

The storage battery industry remained the largest user by far at around 365,000-tons, a reduction of about 15,000 as compared with the previous year. This is attributable largely to cutbacks in new cars.

On the other hand, the second and third largest users of lead, tetraethyl lead for gasoline antiknock compound, and lead cable sheathing, both showed substantial increases. The consumption

of lead for antiknock compounds will probably reach 195,000-tons, up 30,000 over the previous year. Lead for cable sheathing is estimated at 134,000-tons, an increase of about 13,000.

### Lead Consumption Drops

Lead consumed in solder dropped to about 75,000-tons, or about 15 pct. Reduced automobile production undoubtedly was the principal contributor. Most other uses of lead maintained approximately their 1955 levels with a few exceptions, such as bearing metals, type metals and oxides, which showed some decline.

## Machine Tools:

**Busy year ahead . . . Builders report a seven months backlog.**

J. A. Raterman  
President  
National Machine Tool Builders' Assn.

Shipments of metal-cutting machine tools for 1956 will be close to 885-million dollars. This represents a more than 30 pct increase over 670-million in 1955. It is almost up to the 891-million of 1954 when the Korean War was still an important



"Personnel is sending us a young math major who knows nothing about systems and—get this—has no opinions about them."





Jones & Laughlin hard drawn MB spring wire, size .331", is coiled into precision mechanical springs on this Torrington machine. Photo, courtesy of the Duer Spring and Manufacturing Company, McKees Rocks, Pa.



## **SPECIFY J&L SPRING WIRE** **... it's uniform, easy-to-work**

**Outstanding Uniformity** of J&L wire helps you produce better springs . . . with faster production, fewer rejects. J&L spring wire assures uniform physical and dimensional characteristics combined with specific finishes to meet your requirements.

Jones & Laughlin exercises rigid quality control in every operation from ore mine to finished product. Every coil of J&L spring wire, be it famous Mastercraft, hard drawn MB or Electromatic oil-tempered MB, is

thoroughly tested. Jones & Laughlin spring wire is tops in quality . . . competitive in price.

Next time you order spring wire, call your J&L representative or write direct for prompt service.

**Jones & Laughlin**  
STEEL CORPORATION · PITTSBURGH

factor to machine tool users.

As further confirmation of a busy year ahead, the machine tool industry will enter 1957 with roughly a seven months' backlog of metal-cutting machines on its books. While this is similar to last year, deliveries are expected to show substantial improvement.

The trend continues toward more automatic operation of machine tools. Developments of this nature have been so startling that they have overshadowed many improvements in standard general-purpose machines. These carry the burden of machining operations in all but the very largest plants in most industries.

Not a little of the machine tool industry's satisfaction with the showing of the past 12 months stems from the fact that 85 pct of the 1956 total shipments represent domestic peacetime business. Rated defense orders amounted to only 7-pct while foreign shipments accounted for the remaining 8-pct.

Mr. Rateman is president, The Monarch Machine Tool Co., Sidney, Ohio.

## Machine Tools:

**Distributors expect shipments to increase or maintain '56 level.**

J. F. Owens, Jr.  
President

American Machine Tool Distributors Assn.

Total 1956 machine tool shipments sold through distributors exceeded 1955 by substantial margins in most areas of the U. S. and Canada.



Two factors contributed principally to the year's increases in shipments, distributors report: (1) Industry accepted new engineering developments in machine tools to improve efficiency and cut expenses in the face of increased labor and materials costs; the bulk of the year's shipments con-

sisted of newly engineered machine tools that satisfactorily met these requirements, and (2) tax depreciation.

"Tight money" had comparatively little current effect on new machine tool orders placed with distributors during the third and final quarters of 1956. However, industries in some regions reported they would postpone certain expansion projects to await further clarification of national fiscal trends and policies. There were few large-scale cancellations of machine tool orders with local distributors during the period.

On the basis of expansion plans of the manufacturing industries they serve, most distributors forecast their 1957 total shipments will at least maintain 1956 levels. They might increase from 5 to 25-pct over 1956 in regions where continued expansion is in sight.

## Malleable:

**All records could be broken if automotive industry booms.**

L. J. Wise  
President

Malleable Founders' Society

The malleable iron industry marked-up a record year in 1955, thanks to the very large number of automobiles sold. Conversely, in 1956 industry shipments declined an estimated 18-pct. This contrasts with a reported 24-pct decline in cars manufactured. The difference has been made up in shipments to the railroad industry, and was also due in part to a high level of business in a variety of industries served by malleable castings producers. There was, of course, a decline in the requirements for malleable components in the manufacture of farm implements.

The outlook for 1957 in the automotive and railroad fields is good. There will probably be a new high level of requirements



for road building and heavy construction machinery. Farm implement sales should turn upward in 1957 and the malleable industry should benefit from this increase in production.

Shipments in 1957 should exceed a million tons. If forecasts for the general level of business prove to be true, it is possible that a new record in excess of 1,100,000-tons (1955) could be achieved. Whether or not a new record is reached will depend largely on the ultimate demand for passenger cars and trucks.

Mr. Wise is president, Chicago Malleable Castings Corp., Chicago.

## Metal Powder:

**Powdered metals can double production in emergency.**

K. H. Roll  
Executive Secretary  
Metal Powder Assn.

Present estimated capacity of all grades of iron powder is 4040-ton per month. Of this, about 60 pct is now being utilized. Actual consumption of iron powder, however, is nearer 45 pct. 1370-ton per month additional capacity is now under construction and will be available commencing about the middle of 1957.

Of the 4040-ton per month pres-



THE IRON AGE

"That does it, Dick!"



...boost production, cut over-all costs

WRITE TODAY for your copy of this free new booklet which gives detailed information about the many money- and time-saving advantages J&L Extruded Sections offer you.

Jones & Laughlin Steel Corporation  
3 Gateway Center, Dept. 403  
Pittsburgh 30, Pa.

Please send me your new Booklet on Extruded Sections.

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_  
Zone \_\_\_\_\_ State \_\_\_\_\_

AT YOUR SERVICE  
**J&L**  
EXTRUDED SECTIONS  
HOT EXTRUDED AND COLD DRAWN  
... tailor made  
to your specifications

1. YOUR custom-made extruded sections are available in all grades of steel and in quantities as small as one piece or as large as 100,000 pieces.

2. YOUR custom-made extruded sections are available in all grades of steel and in quantities as small as one piece or as large as 100,000 pieces.

3. YOUR custom-made extruded sections are available in all grades of steel and in quantities as small as one piece or as large as 100,000 pieces.

4. YOUR custom-made extruded sections are available in all grades of steel and in quantities as small as one piece or as large as 100,000 pieces.

**STEEL**



Progressive industry is today utilizing J&L's Custom-Made, Hot Extruded Cold Drawn Steel Sections to:

1. Eliminate time and costs in machining and finishing operations
2. Reduce scrap losses practically to the zero point
3. Eliminate the cost of castings and forgings of intricate sections requiring considerable machining
4. Reduce inventories due to quick availability of extruded sections from the J&L plant

These sections can be extruded and cold drawn to the exact specifications of the parts you require—in any quantity you specify. Even the production of a single extrusion can be economical. Obtainable in a wide range of material grades, J&L Extruded Sections can be produced in a large variety of shape profiles—within limits of a design which can be inscribed within a two-inch circle. Many shapes that cannot be hot rolled are practical for the extrusion process.

The mechanical properties of J&L Extruded Sections are equal to or superior to those obtainable from equivalent grades conventionally cold drawn. Cold drawn tolerances are accurately maintained. The excellent surfaces of these Extruded Sections require little—if any—finishing operations.

Send us your inquiry for prompt and efficient J&L service.

**Jones & Laughlin**  
STEEL CORPORATION · PITTSBURGH

ent capacity, 100 pct theoretically is available for power metallurgical applications. Actual use depends largely upon price. About four months is estimated as the time needed to increase present capacity by 50 pct; about 12 months by 100 pct.

Present estimated capacity for copper powder production is 2500-ton per month. Of this, about 65 pct is now being utilized. No additional capacity is under construction or presently contemplated. Slightly more than 100-ton per month standby production is also available.

About 75 pct of the available capacity is suitable for metallurgical application such as in the production of structural parts. In the event of an emergency the total productive capacity could be expanded 50 pct in about six months. It could be expanded 100 pct in about nine months.

## Nonferrous Scrap:

Early '57 not too bright

... Situation "bearish."

H. S. Klingenstein  
President

National Assn. of Waste Material Dealers

Prospects for early 1957 are not too bright. The demand for brass mill products remains at a low ebb. Copper statistics for the month of October again

showed an increase in unsold stocks of refined copper on hand. However, brass mill production barely held its own and is off 20,000 tons from its 1956 peak. The secondary aluminum field is also suffering from intense competition and since virgin aluminum production now exceeds demand, secondaries have to keep the prices of their ingots below those of the primaries. As a consequence scrap aluminum probably will not rise much above present levels.



Since the metal dealer's main commodities are copper and copper base alloys, the year started off with a burst of activity. This carried over from 1955, and lasted until April. With the decline of copper prices on the London Metal Exchange, the increased mine production of copper throughout the world, and the accumulation of large inventories in the hands of brass mills, the terrific demand for scrap disappeared almost overnight.

### Lead Moves Steadily

Lead scrap, an important tonnage, but low profit, item, has moved on a steady market. Zinc scrap, however, has declined in price although zinc itself has likewise been at a firm price all year.

Dealers handling nickel and nickel bearing items have, of course, benefited by the huge demand for that element.

Despite the generally bearish situation, it would be foolish to imagine that scrap is not moving. With a huge volume of non-ferrous production, scrap is generated proportionately.

Mr. Klingenstein is an executive of Keystone Metal Co., Pittsburgh.

## Porcelain Enamel:

Architects, households push volume high.

J. W. Vicary  
President

Porcelain Enamel Institute

In 1956 total dollar volume for the porcelain enamel industry showed a 25-million dollar increase over the 440-million dollar figure achieved in 1955. This level is expected to continue into 1957 with dollar volume approaching the 500-million dollar mark.

Major forces contributing to this boom are: (1) wide acceptance by



architects and builders of porcelain enamel curtain wall construction and (2) growing consumer demand for permanent color in major appliances and household products. Other significant contributors are the trend to lower temperature porcelain enamels and improved processing techniques.

Mr. Vicary is president, Ervite Corp.



"How did the men react when you told them I was cutting out the coffee break?"

## Power:

Plants will produce three-quarters of a trillion kilowatt hours.

S. D. Kennedy  
President

Edison Electric Institute

The giant annual postwar strides of the electric utility industry were maintained in 1956. New records were set in production, sales, number of customers, average use per customer, atomic power development, and other growth aspects.

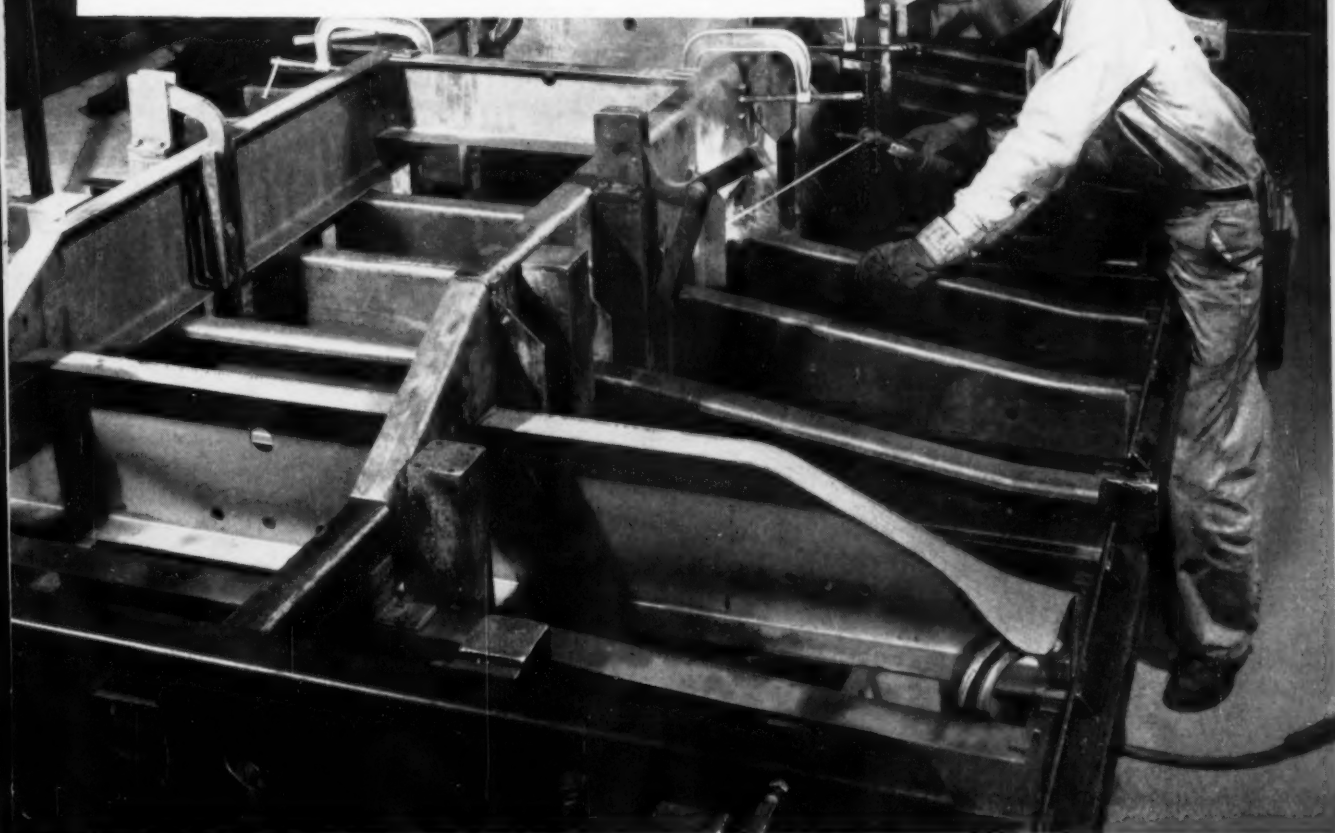
The electric utility industry generated 601-billion kw hr of electricity in 1956. This production was 54-billion kw hr greater than in 1955. It was more than double that of 1949, and more than three times as great as in 1942.

In addition, another 84-billion kw hr were produced by industrial



## **JALTEN** gives equal strength with lighter weight.

Jalten steel plates go well with a weld.  
Pre-heating is unnecessary with Jalten—even the weld is a factor in fatigue resistance



## **Low alloy, high strength Jalten offers good formability coupled with excellent corrosion and abrasion resistance**

Jalten's high strength permits high design loads. It also permits a reduction in section when used to replace mild steels. Usually the reduction amounts to two gages affording a weight savings of approximately 25 per cent. Thus, dead weight can be eliminated—resulting in increased carrying capacity. Also, it is easily welded.

Jalten is furnished in four grades:

**No. 1**—possesses high strength, good formability and fabricating qualities—good resistance to low temperature impact.

**No. 2**—offers high strength, moderate formability—improved resistance to atmospheric corrosion.

**No. 3**—gives high strength—improved resistance to abrasion.

**No. 4**—provides superior formability and surface quality for bumper stock applications requiring plating.

Jalten Steels are available as sheets, strip, plates, structurals, bars and small shape sections.



### **SEND FOR THIS NEW BOOK:**

Chemical properties of Jalten  
Mechanical properties of Jalten  
Jalten equivalents  
Jalten application data

**Jones & Laughlin**  
STEEL CORPORATION · PITTSBURGH



and railway generating plants. This makes a grand total of 685-billion kw hr produced in the U. S.

In 1957 it is anticipated that production will reach total generation of three-quarters of a trillion of kilowatt hours.

Mr. Kennedy is president, Oklahoma Gas & Electric Co.

## Scales:

**Industry sees trend as volume continues spiral upward.**

Arthur Sanders  
Executive Secretary  
Scale Manufacturers Assn.

The scale industry achieved a record high volume in 1956, and appears headed upward again in 1957. Normally the industry's annual volume is not given to wide fluctuations. Yet 1956 exceeded both 1955 and the previous high recorded in 1951, when the industry was not able to supply the demand caused by the Korean War.

Now, the scale industry is practically unanimous in predicting that 1957 volume will exceed that of the record year 1956.

Actually, the current high volume is far more significant than recording a new record; it represents a trend. The average annual volume for the past six years has reached a plateau at least 25 pct

above the average of the postwar forties. And the industry looked on the late forties as a lush period.

## Shipbuilding:

**Employment increasing . . .**

**Lack of steel hurts.**

L. R. Sanford  
President

Shipbuilders Council of America

The trend in shipbuilding and ship repair employment has not yet been reversed. Overall figures remain practically constant during 1956. However, there are grounds for belief that employment will take an upward spurt during 1957. The most recent employment figures show the average number of ship construction employees during the third quarter of 1956 was just about the same in the like period of 1955.

Current orders, as well as new construction in prospect, should commence increasing employment during the first half of 1957. As of November 1, there were 47 sea-going commercial vessels (of 1000 gross tons or over), aggregating 768,460 gross tons, under construction in all of the U. S. shipyards.

During the past year conditions in the ship repairing industry have tended to improve. The trend in employment was upward in the second and third quarters of 1956. The active operating tonnage of the U. S. merchant fleet, upon which ship repairing relies for the major portion of its business, has remained at 9½-million gross tons.

Many new construction plans, including a tanker program calling for unusually large sized vessels, are being hampered because of a lack of steel.

The ship repair yards in 1956 benefited by an unusual type of business: "jumboizing" tankers. This may provide a substantial source of new work. Eleven contracts are already underway in three different repair yards. Jumboizing is a word coined to denote work involving the complete replacement of the section of a ship containing the cargo tanks with a longer section, in some instances, of

greater beam. The lengthening and widening of one class of tankers calls for the fitting of a new middle section of 310 ft in length. This increases the ship to an overall length of 571 ft and a deadweight of 20,000, in comparison with a previous overall length of 523 ft and a deadweight tonnage of 16,000.

## Stampings:

**Picture bright . . . Volume up 10 to 25-pct seen.**

H. A. Daschner  
Managing Director  
Pressed Metal Institute

The overall picture for the metal stamping business is bright. A recent survey of typical contract stamping plants indicates that 56-pct of the stampers look for increased volume in 1957, ranging from 10 to 25 pct. Ten pct of the stampers look for a drop of up to 10-pct in their volume. Thirty-five pct feel that 1957 will hold its own with 1956.

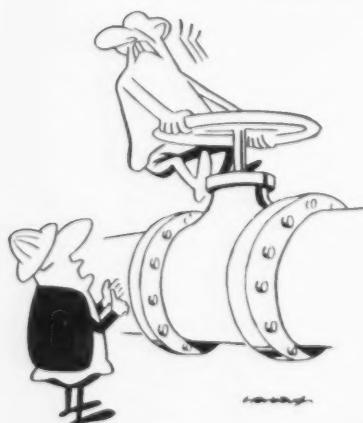
The study reveals that 35-pct of these stamping plants have recently increased their physical plant capacity. These increases in size range from 5000 to 50,000-sq-ft with an average increase of 14,000-sq-ft.

Forty-four pct of the plants plan to enlarge their physical capacities during the next two years. These will be expanded either on present properties or, in several instances, new plants will be constructed on properties more suitably located for their operations. Over 50-pct of the stamping plants reporting purchased new presses this past year with an average just under four presses per plant. Roughly one-third of these are either automatic or high speed equipment.


Eighty pct found 1956 a better year than 1955, shipment-wise; profit-wise, margins are narrowing. Ten pct found 1956 shipments under 1955 and 10 pct reported "no change."



THE IRON AGE



"Whenever I can't open something at home I hold it under the hot water!"



## Jones & Laughlin Electric Resistance Welded Pressure Tubing

**QUALITY CONTROL**—Jones & Laughlin, an integrated steel maker, controls every step of production from iron ore to finished tubing.

**RIGID TESTING**—most modern testing procedures, at every step of progress, assure maximum strength and safety standards. Users can be sure that every safeguard possible is used before a tube is certified to ASTM A178-55 or A214-55.

**EASE OF FABRICATION**—J&L pressure tubing can be fabricated according to your requirements.

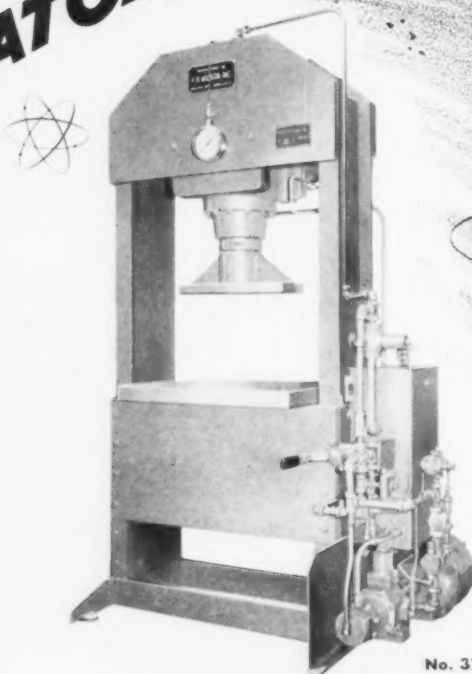
For your next order, specify Jones & Laughlin pressure tubing for long life, maximum strength, clean appearance. Write for name of your nearest source.

**Jones & Laughlin**

STEEL CORPORATION • PITTSBURGH

# K. R. WILSON PRESS HELPS HARNESS

## ATOMIC ENERGY



No. 3700AA-200-2

### DRAMATIC EXAMPLE OF PRESS PROGRESS BY WILSON

Zirconium! . . . in this single word lies a story of remarkable press progress at K. R. Wilson. A press was needed for cutting and pressing zirconium, glistening metal vitally important in the construction of nuclear reactors for atomic energy. The problem was put to Wilson engineers. *The challenge was accepted and a press was built to do the job!* The

K. R. Wilson 3700AA-200-2 200-Ton Capacity Motor Driven Hydraulic Press combines all the features necessary to cut and press zirconium with maximum efficiency and economy. The 3700AA-200-2 is but one of scores of examples of the years-ahead technical thinking that makes any type of Wilson press your wisest buy.

#### CONSIDER THE FEATURES AND YOU'LL CHOOSE WILSON MODEL No. 3700AA-200-2

**HEAVY DUTY RAM** 6" diameter heat treated and ground alloy steel ram, 10" bore, 18" stroke.

**DOUBLE ACTING CYLINDER** Provides power on upstroke for stripping and to offset weight of tooling.

**COMPLETE RAM CONTROL** Stops in any position; allows you to raise just enough to clear work.

**GUIDED RAM** Non-rotating ram completely eliminates ram turning.

**SIDE-MOUNTED HYDRAULIC UNIT** Requires minimum amount of floor space; easily accessible for service.

**RAM SPEEDS** Rapid Idle Approach Speed to 23 tons, 52" per minute. Pressing Speed to 200 Tons, 8 1/4" per minute. Rapid Idle Return to 15 Tons, 75" per minute.

FOR FULL DETAILS WRITE FOR BULLETIN No. 37

HYDRAULICS DIVISION

**K. R. WILSON, Inc.**

OFFICES AND FACTORIES — 208 MAIN ST., ARCADE, NEW YORK, U.S.A.



WHAT'S AHEAD

## Steel Castings:

Up 27-pct in '56, production  
will level off.

F. K. Donaldson  
Executive Vice President  
Steel Founders' Society of America

Production in the steel castings industry during 1956 was about 27-pct above that for 1955. Demand was strong throughout the year, particularly in the railway castings field. It was the largest peace-time year in the history of the industry.



Operation will probably level off somewhat during the first quarter of 1957. From a long term view, the indicated high rate of spending in the durable manufacturers field augurs well for continuing growth.

### Machinery Is Improved

Installation of improved production machinery was continued during 1956. This was principally in the fields of materials handling equipment, sand conditioners, palletizing, shakeouts, and improved molding facilities. Core blowing equipment is coming into more use;



Remember that we're all one big happy family here, Binks, but don't forget that I'm the head of it.





**You couldn't be in a "finer pickle"!**

New wire-mill modernization at Bristol Brass gives new weight to the comment we hear so often from our customers: "Bristol makes the best Brass wire we ever bought."

They only say that because it's true. And we keep it true by a continuous program of wire mill modernization. Since 1953, Bristol has installed a new tandem rod mill, a new continuous wire-drawing machine, and a new pickling tank line (shown) that speeds up the whole operation. In process, also, are new finishing and furnace equipment . . . all adding up to one of the most modern and efficient wire mills in the country.

That's why we never contradict our good wire customers when they say: "You never had it so good — as you can get it from Bristol Brass." Put yourself "in the same pickle" . . . call Ludlow 2-3161!

and for BRASS FORGINGS, too . . . get them from . . .  
**ACCURATE BRASS CORP.** (Subsidiary of The Bristol Brass Corp.)  
 now in a new and modern plant at Bristol, Conn.

**THE BRISTOL BRASS CORPORATION**

has been making Brass strip, rod and wire here in Bristol, Connecticut since 1850, and has offices and warehouses in Albany, Boston, Buffalo, Chicago, Cleveland, Detroit, Milwaukee, New York, Philadelphia, Providence, Rochester, Syracuse. The Bristol Brass Corporation of Ohio, 1607 Broadway, Dayton.

*"Bristol-Fashion"* means **Brass at its Best**

the new method of core shooting is attracting considerable attention. A substantial number of steel foundries are now engaged in producing shell molded castings.

In the materials field, steel foundries are concerned with the scrap situation. Top grades of scrap which are necessary for steel foundry operation are in short supply. The continued high rate of scrap export is adding to the seriousness of the picture.

## Steel Containers:

**Expect 5 to 8-pct rise . . . World disturbances could boost this.**

Livingston Keplinger  
President

Steel Shipping Container Institute

From 1940 through 1956 unit production of heavy gage drums has more than doubled. This increase

is in spite of the fact that offshore shipments of petroleum products, which until Korea War accounted for approximately 15 pct of total heavy gage drums, have now completely disappeared. This is due to the construction of refineries in foreign countries.

Sales of light gage drums and pails since 1940 have approximately tripled in production. It appears that 1956 approximated the sales for 1955 in all categories.

If general conditions remain the same, 1957 should show approximately from 5 to 8 pct increase over 1956. Continued disturbances around the world could quite possibly cause a return of some of the offshore business.

## HANSEN SERIES RL QUICK-CONNECTIVE RING-LOCK COUPLINGS



Relative size of ordinary coupling required for effective handling of same volume.

**HANSEN  
SERIES RL  
EFFECTIVELY  
HANDLES MORE VOLUME  
THAN ANY OTHER  
COUPLING OF EQUAL  
DIMENSIONS**

Hansen Series RL One-Way Shut-Off Couplings will handle any job in your shop using  $\frac{3}{4}$ " to  $\frac{1}{8}$ " connections—from the air line to the air tool. All Hansen Series 2-RL Sockets and Plugs are interchangeable with each other. Likewise all Sockets and Plugs of the slightly larger, greater capacity Series 3-RL are similarly interchangeable with each other.

Consequently, by standardizing on either Hansen Series 2-RL or Series 3-RL Couplings, you eliminate any need for various size couplings in your hook-up—make it easy to keep stock of parts in balance—and hold inventories to a minimum.

Locking ring provides positive lock and assures tight fit. Equipped with automatic sleeve lock.

**HANSEN  
SERIES RL  
HANDLES ANY JOB  
WITH FITTINGS FROM  
 $\frac{3}{4}$ " to  $\frac{1}{8}$ ", FROM  
THE AIR LINE TO  
THE AIR TOOL**

Two-Way Shut-Off and Straight-Through Couplings also available.

**WRITE FOR CATALOG**

SINCE 1915



QUICK-CONNECTIVE FLUID LINE COUPLINGS

**THE HANSEN**

**MANUFACTURING COMPANY**

4031 WEST 150th STREET • CLEVELAND 11, OHIO

## Structurals:

**Highways will spark  
another record year.**

N. P. Hayes  
President

American Institute of Steel Construction

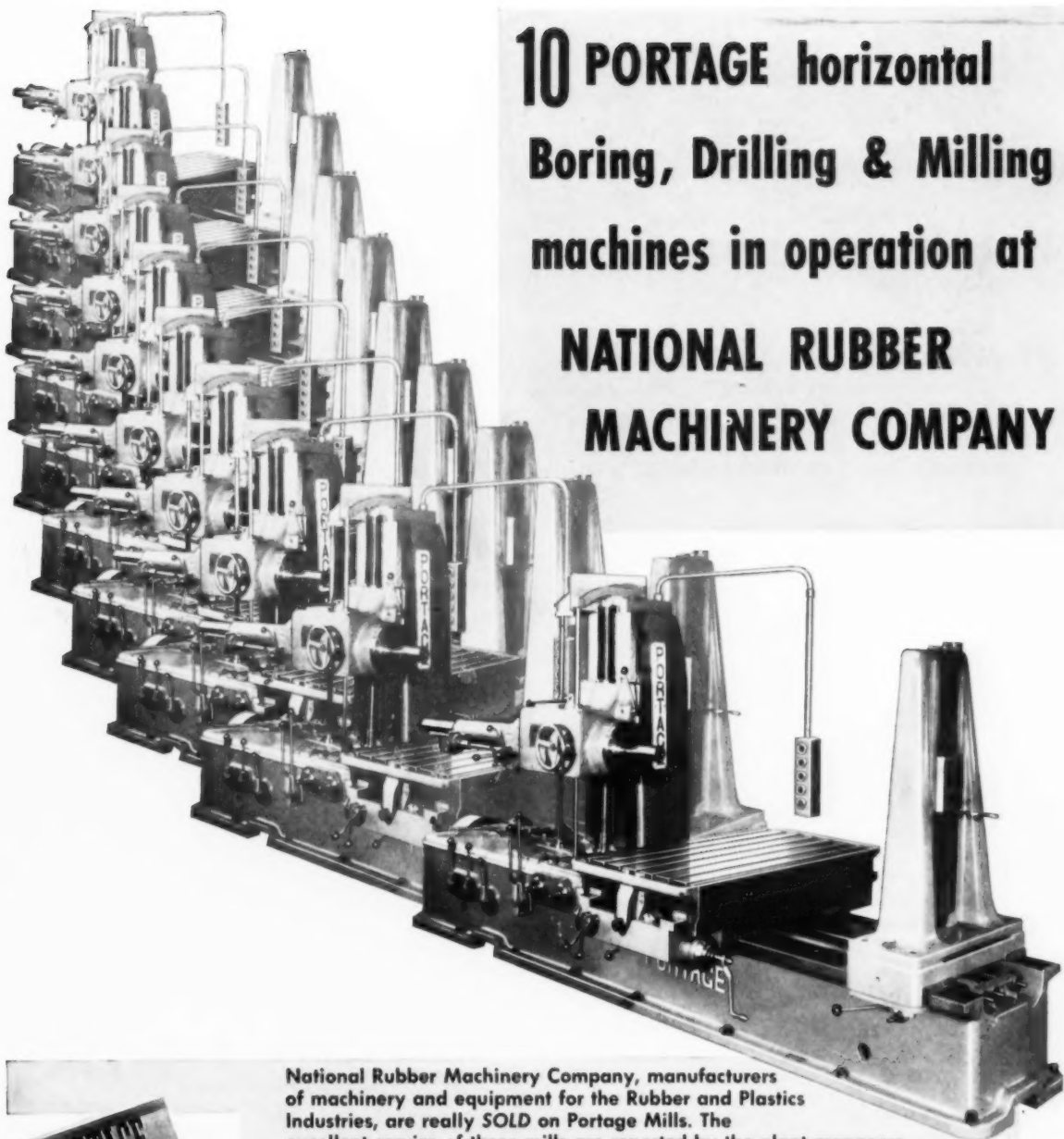
Producers of fabricated structural steel expect another record year in 1957. They expect new orders to reach 4,050,000-tons. This is a 4-pct increase over 1956. Further predictions indicate shipments during 1957 will exceed 3,800,000-tons, an increase of 14-pct over 1956.

An encouraging note for steel construction is the capacity added by basic steel mills during 1956. This increases structural rolling capacity by 16-pct.

The main spark for increasing demands in steel construction markets next year will be highway and bridge work. Continued gains are also expected in commercial building and miscellaneous structures such as schools and other non-residential buildings. Only decline expected: a slight one in industrial buildings.

Actually, 1956 proved a record year despite the loss of approxi-





# 10 PORTAGE horizontal Boring, Drilling & Milling machines in operation at NATIONAL RUBBER MACHINERY COMPANY



National Rubber Machinery Company, manufacturers of machinery and equipment for the Rubber and Plastics Industries, are really SOLD on Portage Mills. The excellent service of these mills are reported by the plant managers at Columbiana, Ohio and the Akron Division plant. This large installation certainly represents a vote of confidence for the performance of Portage Mills . . . and speaking of confidence . . . many leading manufacturers have come to realize that the ruggedness, versatility and low maintenance cost of Portage Mills makes them the best buy . . . and remember . . . their initial capital investment cost is less, without the sacrifice of quality. Write for complete information . . . TODAY.



THE *Portage* MACHINE CO.

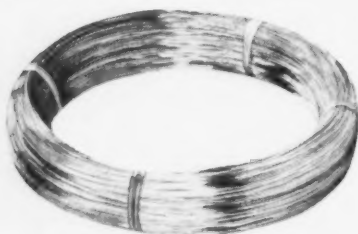
1035 Sweitzer Avenue • Akron 11, Ohio

Representatives in Principal Cities

BUILDERS OF PRECISION MACHINE TOOLS, SPECIAL AND PRODUCTION MACHINERY SINCE 1916



**unsnarl your  
wire problems**



**with WEBB  
quality wire**

Whatever your application or problem involving fine quality wire, the combination of Webb *quality* and *experience* is sure to pay off in fewer headaches and greater production savings. Wide range of sizes and analyses in . . .

**STAINLESS WIRE  
NEEDLE WIRE  
SPECIAL ALLOY WIRE**

Webb specialists take pride in putting an extra measure of painstaking care into every coil of Webb Wire. See what a difference this can make in your production, your costs and your customer satisfaction.



Write today for this new data sheet containing full information on Webb Stainless Wire.

**WEBB WIRE**

a division of  
The Carpenter Steel Company  
New Brunswick, N. J.

#### WHAT'S AHEAD

mately 500,000-tons of structural shape production during the steel strike.

Mr. Hayes is president, Carolina Steel & Iron Co., Greensboro, N. C.

#### Tooling:

Rapid tech strides coming;

Outlook "excellent."

H. E. Conrad  
Executive Secretary

American Society of Tool Engineers

The 1957 outlook for the whole tooling field is excellent. The first six months should be among the best yet; the year as a whole may set a record. There is a high backlog of orders for new machine tools and for special tooling in the tool and die shops.



Many new production plants are coming into operation daily; so a large gain in new plant and equipment spending is anticipated in 1957. Such spending reflects directly, of course, on the activity of the tooling field.

You can expect rapid strides in automation improvements, especially in the fields of machine con-



"The boss is putting you in charge of the Portland plant? We have no Portland plant."



For the top three floors of the beautiful new Socony Mobil office building in New York City, we furnished more than 40,000 sq. ft. of perforated stainless steel wall panels.

**from Sky Scrapers  
to Spin Driers  
and Juke Boxes**

What do YOU require in Perforated Metal? Already there are thousands of established applications and new requirements are developing every day . . . in such fast growing fields as Air Conditioning, Atomic Energy, Aviation, Chemical Processing, Electronics, Household Appliances, Noise Control, Smoke Abatement, Space Heating, etc.

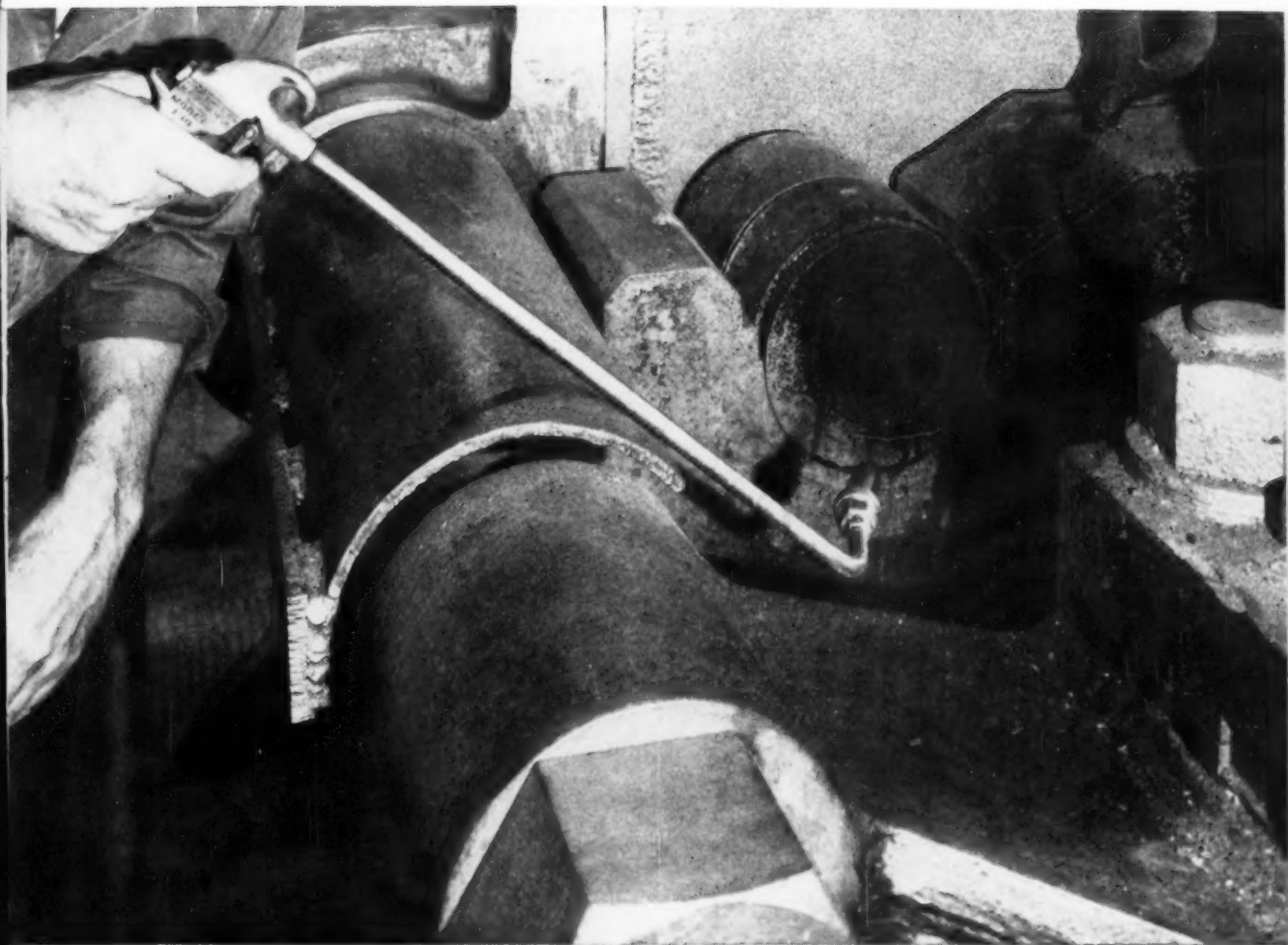
We produce metal sheets and parts with any desired type or size of perforation and have hundreds of specialized tool arrangements, to assure prompt, accurate service at competitive costs. Catalog 39 contains complete working data and shows many interesting applications in its 32 large illustrated pages. Write today for a free copy and tell us about ANY requirement for perforated metals.



**DIAMOND MANUFACTURING CO.**  
**Box 41 WYOMING PENNA.**  
(Wilkes-Barre area)

West Coast Plant, Diamond Perforated Metals Co.  
17915 So. Figueroa St., Gardena, Calif.  
Los Angeles Area





*'dag' dispersions... a touch does so much!*

## Extrusion die life lengthened nearly 600%

In extrusion operations many mills have found that 'Aqua-dag'® applied to the die surfaces permits freer metal flow, inhibits build-up of precipitates on bearing surfaces and materially lengthens die life. Titan Metal Products reports that a dispersion of 'dag'® Colloidal Graphite in water increased the number of "pushes" through one die from 150 to 1,000 before appreciable wear.

'dag' Colloidal Graphite also permits easier removal of the "skull", prevents the follow block from sticking to the billet, and prevents the welding of extruded metal to the die. Furthermore, smoke and toxic fumes are eliminated.

Conventional lubricants are not practical at the temperatures and pressures involved in extrusion. Your Acheson Service Engineer can show you how 'dag' colloidal dispersions will reduce maintenance and help increase profits in your mill. Also write for Bulletin 423 describing 'dag' dispersions for high-temperature lubrication.

For ready-to-use lubricants containing 'dag' dispersions, see your own oil supplier or write directly to us.

### ACHESON COLLOIDS COMPANY PORT HURON, MICHIGAN

A UNIT OF ACHESON INDUSTRIES, INC.



#### ACHESON COLLOIDAL DISPERSIONS:

Graphite • Molybdenum Disulfide • Zinc Oxide • Mica and other solids

#### Offices in:

Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles • Milwaukee  
Philadelphia • New York • Pittsburgh • Rochester • St. Louis • Toronto

### ACHESON COLLOIDS COMPANY Port Huron, Michigan, Dept. D-1

Yes, I want your free bulletin describing 'dag' dispersions for high-temperature lubrication.

Name

Title

Company

Address

City  Zone  State

trol and gaging. Machine programming improvements (such as numerical control) will make the advantages of automation more practical in small quantity production. There will be tooling developments that will make it possible to run machines automatically for more extended periods.

## Truck-Trailers:

**Production repeats; Expansion the key . . . Some grunts, groans.**

C. L. Schneider  
President  
Truck-Trailer Manufacturers Assn.

The truck-trailer industry is looking forward to expansion during the coming year. From all sections of the nation come sounds of growth, albeit, some grunts and groans, but none of retrenchment.



Even though monthly production for seven out of the first nine months were below those of the corresponding 1955 period, the overall nine-month total for 1956 is higher. This point is important; the whole of 1955 set an all-time high in civilian trailer production of 74,498 units for domestic consumption. Through Sept. 1956, overall production totaled 56,947 units.

It is expected that the total 12 months production will be at least 75,000, approximately the same as in 1955. The dollar value of this number of trailers would be about \$364,000,000, against a total very similar to that for 1955.

## Welding:

**Future emphasis will be on greater productivity.**

J. J. Chyle  
President  
American Welding Society

Future emphasis in the welding industry will be on greater pro-

ductivity. Adoption of more automatic welding equipment is necessary to take advantage of increased labor costs. Where a product is produced in large quantities, carefully designed welding fixtures reduce overall welding costs.

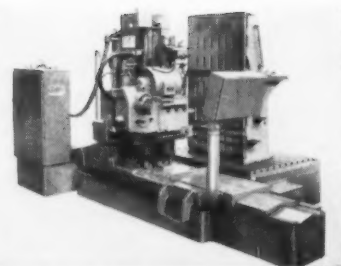
One of the newest processes in welding carbon steel is CO<sub>2</sub> gas shielded welding. CO<sub>2</sub> welding can be applied to thin gage metals at high speeds. It has found a place in welding thin sheets at high speeds. The weld deposit has excellent quality, good visual appearance, and requires very little, if any, cleaning after welding.

Improvements have also been made in spotwelding thin sheet materials with automatically controlled inert-gas spotwelding equipment. For low cost installation this process appears to have considerable merit in joining light gage sheet metals together. It can be used not only with carbon steels, but also with stainless and many alloys in sheet form.

In the field of brazing thin sheet metals, new materials have been developed with free flowing properties. These are primarily used in the joining of stainless sheets together where brazing is employed. The alloys are adaptable not only for manual brazing applications, but also for fully automatic brazing in controlled atmosphere furnaces.



"I just ran into something big I think you'll be interested in, George."



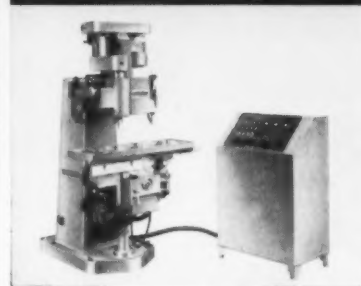
**A P&W Tracer-Controlled MILLER FOR EVERY JOB**

### KELLER Type BG-21

... A powerful, versatile machine made in a range of sizes from 5' x 2½' to 10' x 4' in single spindle or 2-spindle models.

### KELLER Type BL

... A compact powerful Tracer-Controlled Miller for work within the range of 36" x 20", with all the new KELLER features. Single spindle and 3-spindle models.

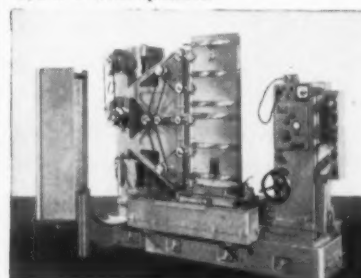


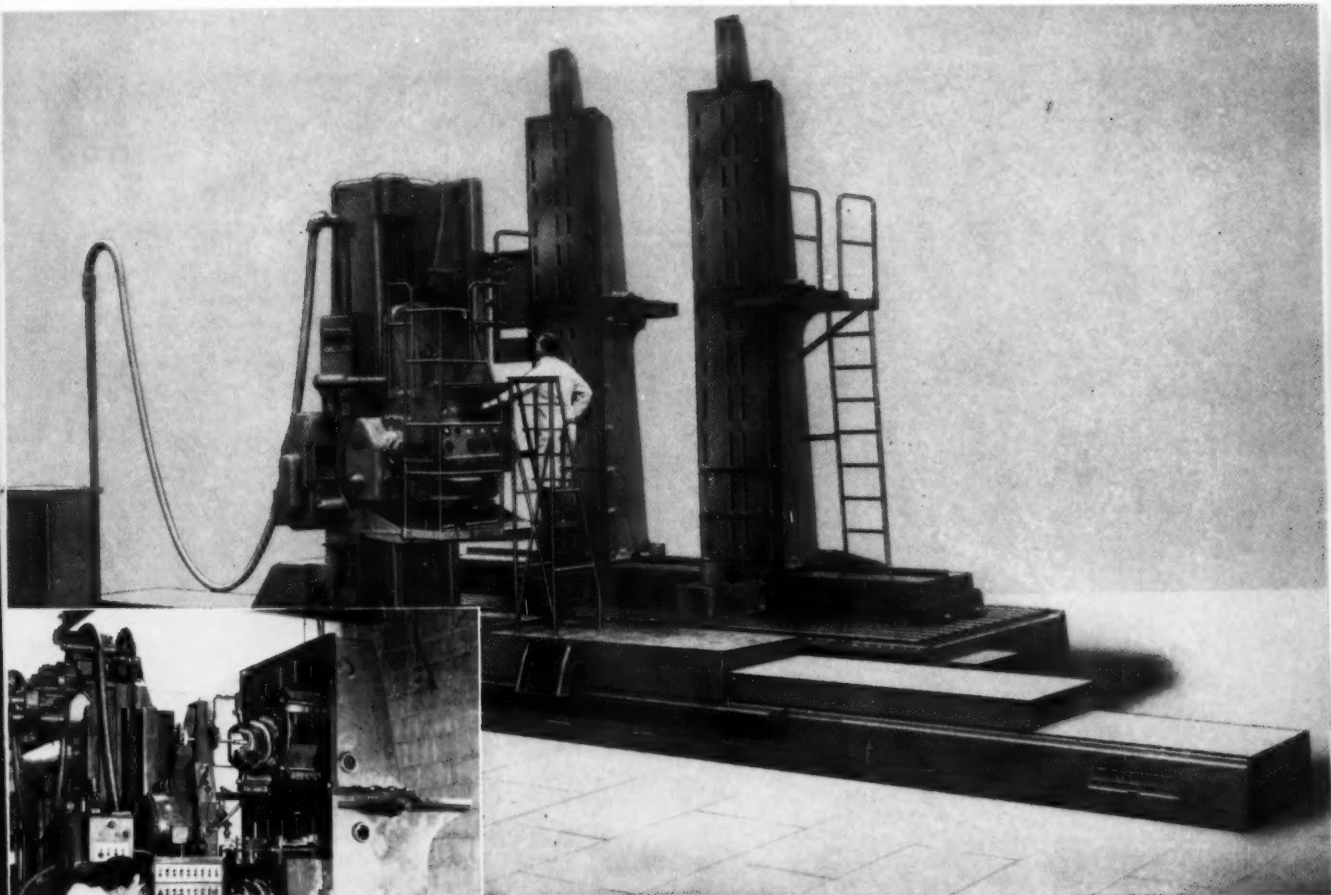
**VELVETRACE® Kellering Machine**

... Duplicates the finest detail with extreme precision. New, non-contacting tracer accurately follows any 3-dimensional model without touching it. Cannot damage the softest, most fragile models.

### Automatic Duplicating Machine

... Specially designed for low cost production of forging dies and molds for glass and plastic. Automatically re-produces original dies and molds with precision and remarkable detail. There are two versions of this machine, one for machining bottle molds, one for forging dies. Supplied with 1, 2 or 4 cutter spindles.





## Still Running Fine, BUT

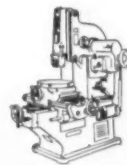
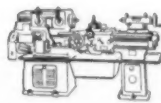
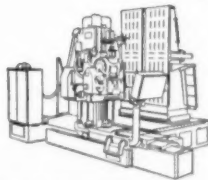
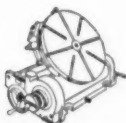
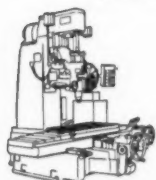
**TODAY'S KELLERS WILL BRING EVEN GREATER PROFITS.**

You may put off replacing an older machine because "it's still paying its way." But is it? A machine tool purchased years ago may be the cause of lost efficiency, higher labor and per-unit costs, the inability to produce high quality *economically*. Failure to compete profitably with more modern machines may be putting you far behind your competitors. For example, just 10 short years ago our Keller BG-2 Tracer-Controlled Miller was the ultimate in productive efficiency, but let's check the added features possessed by its successor, the new P&W BG-22 Keller . . .

1. Operates from any conventional polyphase current, with no motor generator set required.
2. Increased travel speed of cutting tool . . . to an infinitely variable range from 0.5 to 30.0 inches per minute.
3. Three dimensional tracer permits motion in 2 directions at the same time, yet allows interlocking action for accuracy. One slide is kept always in motion, while the second moves as required to follow the shape and maintain accurate interlocking action.
4. More nearly perfect surface cutting speed over irregular contours assured through superimposed auto-speed control of all motions.
5. Increased capacities . . . up to 20 feet horizontal x 7 feet vertical.
6. Centralized operator controls supplemented by remote control stations.
7. Rapid traverse in all three motions.
8. Automatic lubrication.
9. Score-proof phenolic bearing surfaces on all slides and lead screw nuts.

*Write for complete information.*

**Pratt & Whitney Company, Incorporated**  
10 Charter Oak Boulevard, West Hartford, Conn.



**JIG BORERS . . . ROTARY TABLES . . . KELLER MACHINES . . . LATHES . . . VERTICAL SHAPERS . . . CUTTER AND RADIUS GRINDERS**



# PRATT & WHITNEY

**FIRST CHOICE FOR ACCURACY**

**MACHINE TOOLS • GAGES • CUTTING TOOLS**

## THE IRON AGE



Everybody's  
happy

New Car Dealer

New Car Buyer



Used Car Dealer

Used Car Buyer

with Automobile trim

of  
**Stainless  
Steel**

On the showroom floor—on the highway—in and out of the used car lot—all the way to the ultimate owner, *stainless steel* pleases everyone! Stainless keeps selling itself because it's *the metal that does not deteriorate*. Always bright. Always beautiful. So easy to care for. So satisfying to find on your car.

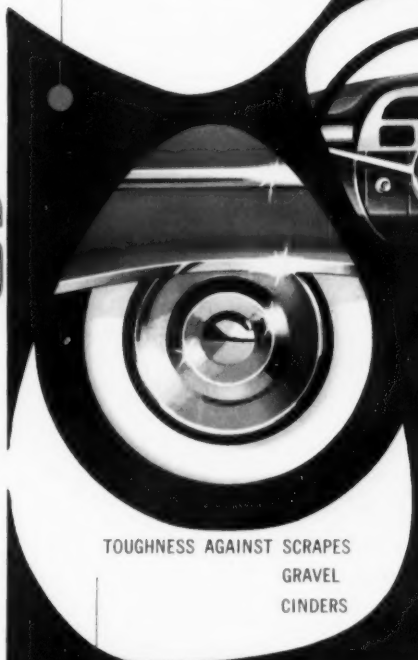
STRENGTH AGAINST DENTING



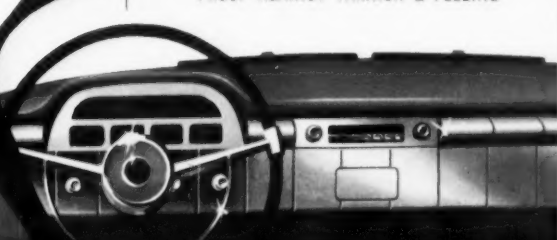
PRIDE MAKING BEAUTY



RESISTANCE TO SALT PITTING



PROOF AGAINST TARNISH & PEELING



PROOF AGAINST RUST



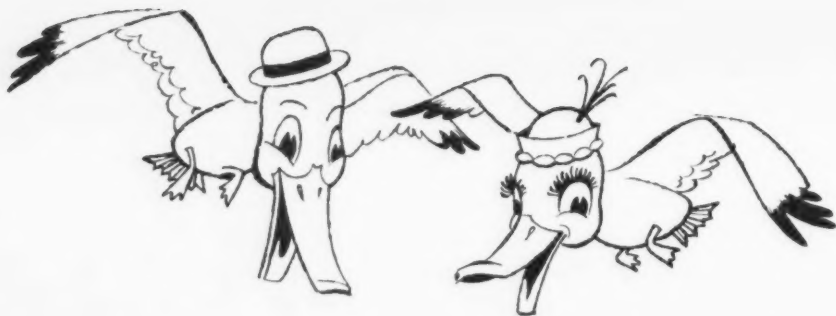
TOUGHNESS AGAINST  
SCRAPES  
GRAVEL  
CINDERS

Superior Stainless STRIP STEEL

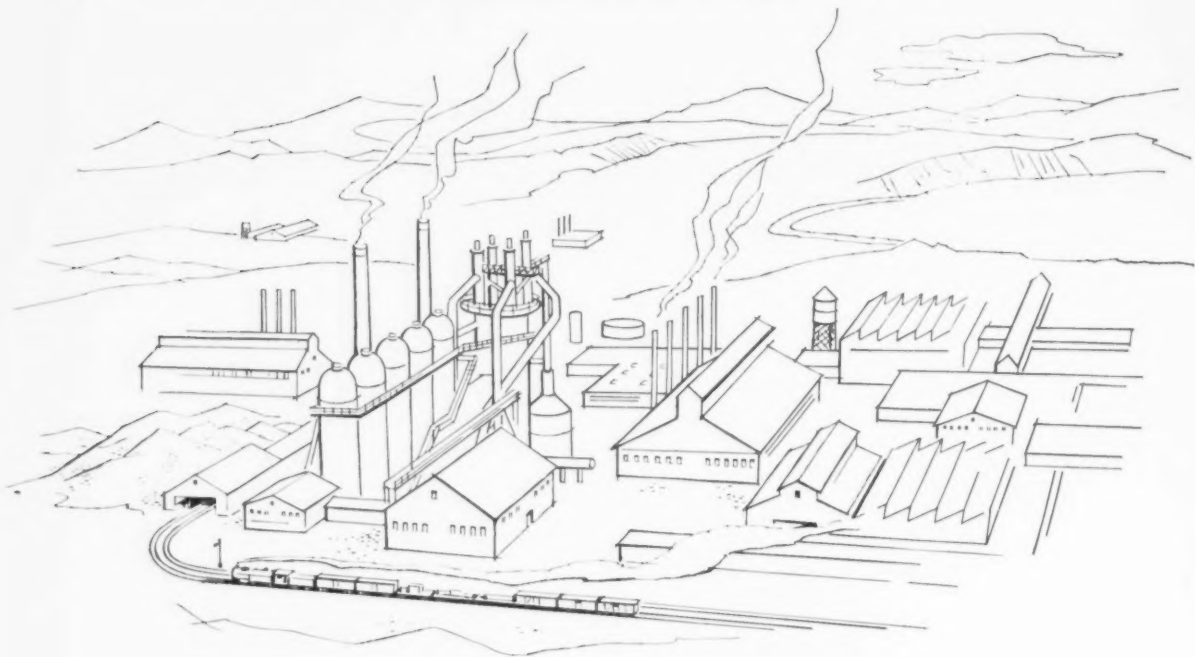
**Superior Steel**

CORPORATION

CARNEGIE, PENNSYLVANIA



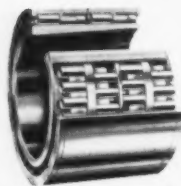
Production is smooth as water rolling off your back!



No wonder: **SKF**® has developed a roll neck mounting that meets the demands for higher speeds, closer gauge tolerances, better quality and heavier rolling loads. This multi-row has the features desired by every mill man — most usable capacity in a given space...easy to assemble and disassemble...uses oil or grease, even at high finishing stand speeds.

When you install a new mill, make sure it is equipped with **SKF** multi-row cylindricals. Or have an **SKF** engineer explain how your present mill can be changed over at minimum cost to eliminate roll neck troubles such as breakage, scuffing, excessive bearing failures or high maintenance time and cost.

7737



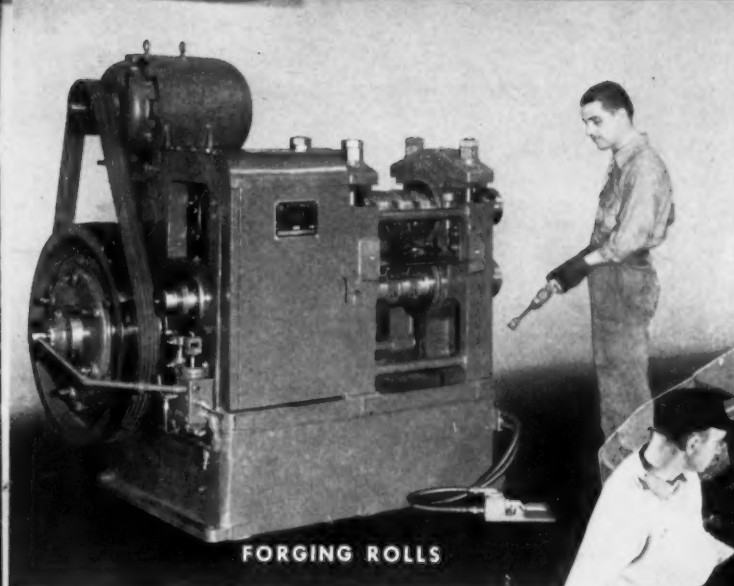
**SKF**

**EVERY TYPE—EVERY USE**

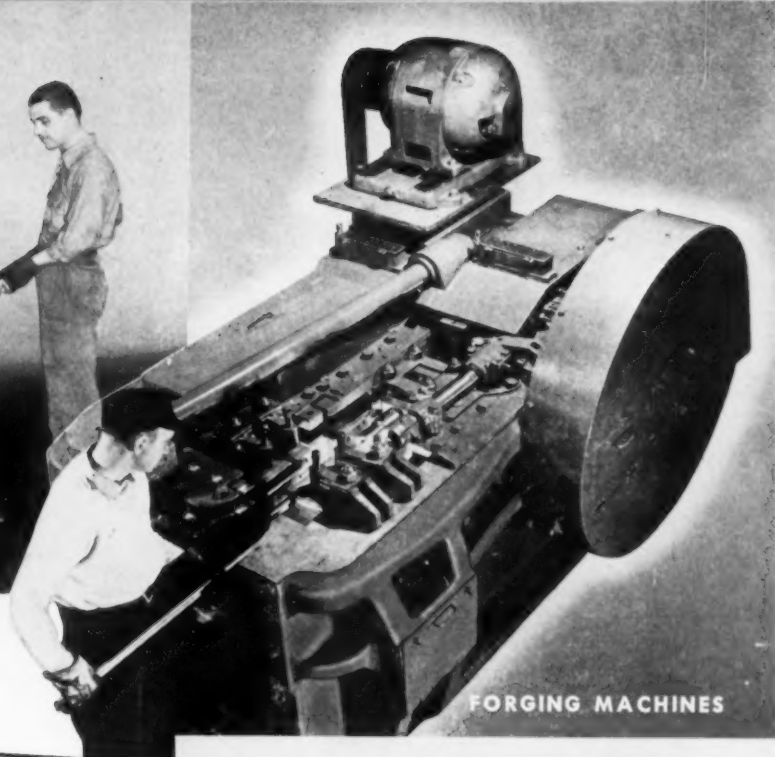
Ball Bearings  
Cylindrical Roller Bearings  
Spherical Roller Bearings  
Tapered Roller Bearings ("Tyson")

\* Reg. U.S. Pat. Off. Tyson Bearing Corporation

**SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.**



FORGING ROLLS



FORGING MACHINES

# AJAX FORGING MACHINERY

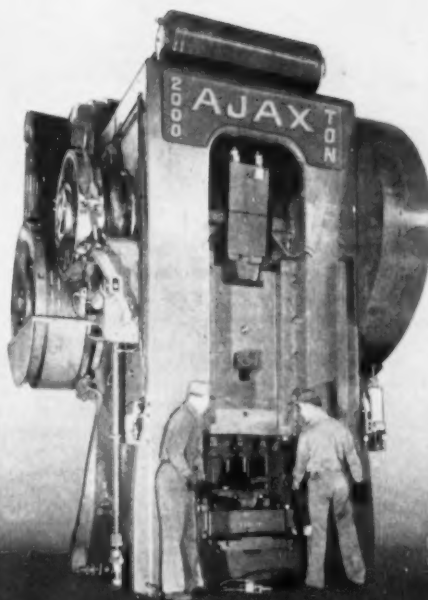
— Air Clutch Operated —  
FOR  
High Production

For speed in production . . . for accuracy of the forged part . . . and for capacity . . . AJAX provides a complete line of Forging Presses, Forging Machines, and Forging Rolls of the most advanced design ever offered to Industry.

Great rigidity, power and excellent alignment of these machines makes possible the production of uniformly accurate forgings with a minimum of machining.

Instantaneous response of the Air Clutch to the operator's control completes many multi-stage forgings in one heat and improves die life. Smooth, cushioned starting at high speed assures long machine life.

Write for descriptive bulletins



FORGING PRESSES

## AJAX METAL WORKING MACHINES

Forging Presses • Forging Machines • Forging Rolls

Ajax-Hogue Wire Drawers • Continuous Drawing & Straightening Machines

THE AJAX MANUFACTURING COMPANY

CLEVELAND 17, OHIO

110 S. DEARBORN ST., CHICAGO 3, ILL.

W. P. WOOLDRIDGE CO. • BURLINGAME, CAL. • LOS ANGELES 22, CAL.

## Forging: Modern techniques resulting in increased productivity.

C. H. Smith  
President  
Drop Forging Assn.

Modern machines and skill, scientific and technological progress provide the key to many develop-

ments in the forging industry. Closed-die forgers have found ways to work new materials, such as titanium and high-temperature alloys. Automated procedures, new forging equipment and techniques, are enabling the industry to expand.

Continuing the trend of 1956, the demand for forgings in 1957 is expected to be upward. Requirements of the aircraft and construction equipment industries are likely to remain high or even increase.



## WHY . . . Should You Measure To MILLIONTHS OF AN INCH?

All gaging authorities agree that it is necessary to gage to an accuracy 10 TIMES GREATER than the desired working tolerance. Therefore, if your tolerances are .0005" or less, you should use a gage accurate to 50 millionths of an inch to assure proper dimensional control. Conventional mechanical indicators cannot maintain, or repeat this degree of accuracy.

Industry is finding the electronic indicator not only more accurate and repeatable, but also less subject to damage than conventional mechanical indicators. In addition, its simplicity of operation enables any operator, who can use a dial indicator or micrometer properly, to measure accurately to millionths of an inch.

### Simple And Easy To Read To MILLIONTHS OF AN INCH . . .

The INDI-AC ELECTRONIC INDICATOR is merely set to the required dimension with standard gage blocks. The parts to be gaged are then placed under the gage tip and the meter indicates the variations from the desired dimension MAGNIFIED UP TO 10,000 TIMES! Thus it is far simpler and easier to read than a dial indicator or micrometer.

This versatile instrument is used for all gaging purposes such as surface plate or height gage work, checking setups, runout or alignment of parts or machines.

Using the INDI-AC, the tolerances which you now estimate will be easy to work to and measure.

**WRITE for further details on the new INDI-AC and other Electron'c  
Production Gages, TODAY!**

**Cleveland INSTRUMENT COMPANY, INC.**  
734 Carnegie Avenue • Cleveland 15, Ohio

## WHAT'S AHEAD

Needs of the automotive industry will probably be greater than in 1956. Demand for agricultural implements should revive. The growing use of forgings in a great variety of miscellaneous products, including safety equipment, mechanized home and garden tools, machinery, sports equipment, etc., is a factor in demand. Hindrances like that caused by the 1956 steel strike are not anticipated, though it must be stated that 1956 was a smoother year than 1955, which was affected by a bad dip in consumption by the auto industry in the 3rd quarter. For quantitative comparison, shipments of forgings ran 1.7-million tons in 1955, increased to about 2-million tons in 1956, and may reach 2.2 to 2.4-million tons in 1957.

The commercial forging industry as a whole views this upward trend as a long-term movement, dependent on the progressive accomplishments of commercial forging plants, and which, if continued, will not only provide benefits within the industry, but which will work to the advantage of the millions of people who make and who use the quality products of which forgings are components.

## Metal Lath:

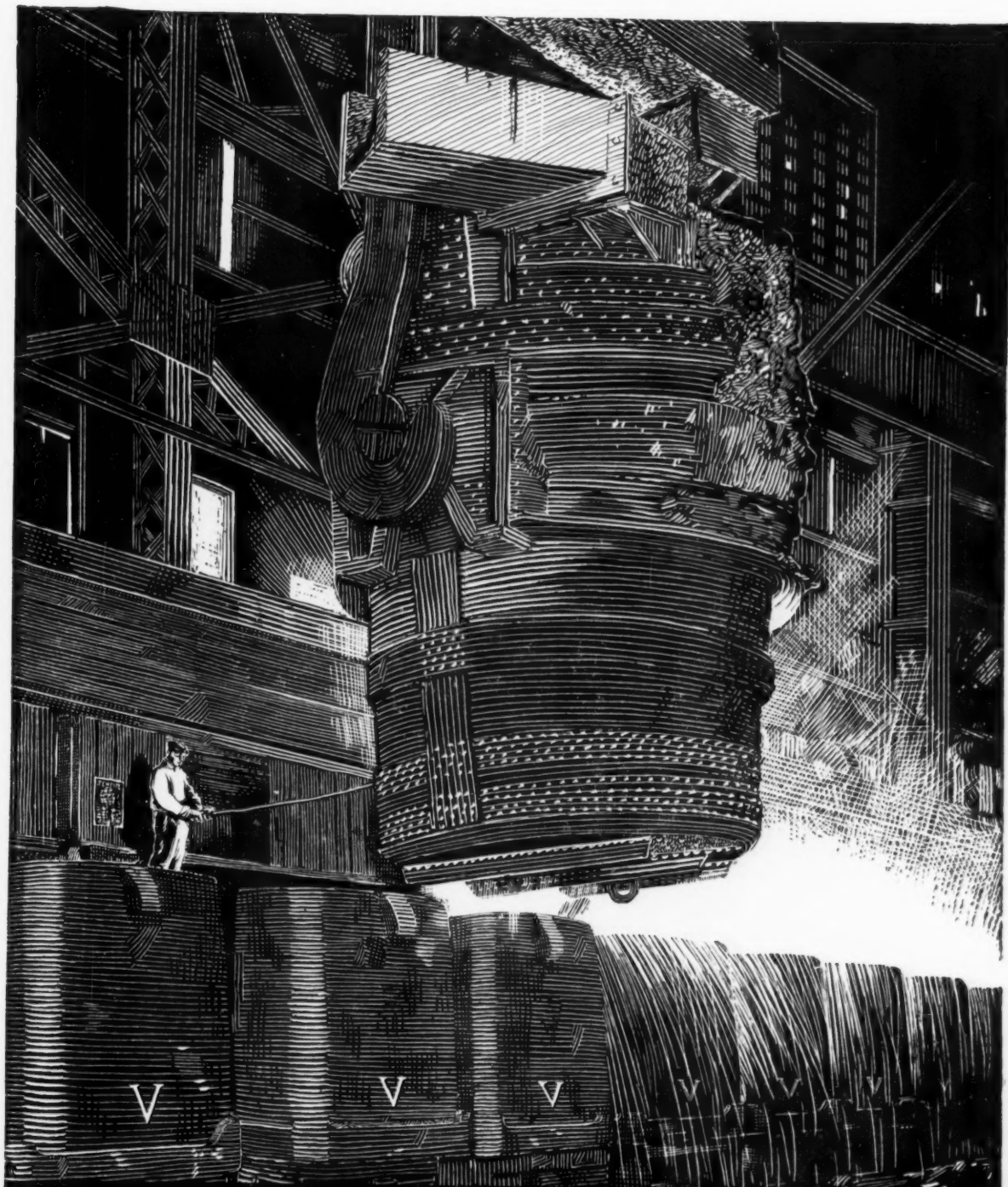
**Production will be bolstered  
by contrasting elements.**

Donald R. Wadle  
Managing Director  
Metal Lath Manufacturers Assn.

Metal lath producers are highly optimistic about the outlook for their industry in 1957. This feeling is not a 'tongue in cheek' comment, but it is ascribed to specific industry-wide forecasts relating to the type of construction in which metal lath normally is used. Assuming that these prognostications are correct, the increased demand for a substantial volume of metal lath is expected to surpass previous anticipations.

Membrane fireproofing, a method of using metal lath and gypsum-lightweight aggregate plaster for fireproofing of steel structures, has





# **VALLEY MOULD AND IRON CORP.**

**General Offices: HUBBARD, OHIO**

**Western Office: Chicago, Ill. • Northern Office: Cleveland, O.**

# METAL STAMPING FACILITIES

by *Lansing*  
at your Service for...

**TRANSPORTATION**  
EQUIPMENT

**HOUSEHOLD**  
APPLIANCES

**ELECTRICAL**  
EQUIPMENT

**INDUSTRIAL**  
EQUIPMENT

**FARM**  
IMPLEMENT'S

*Lansing Stamping Co.*  
ESTABLISHED 1914  
LANSING 2 MICHIGAN

created a sizable boost for the industry. The metal lath people, together with other interested groups, have spent considerable time, effort, and expense in expanding the application of this type of fireproofing.

Another pleasing aid to metal lath sales stems from the application of plaster to metal lath by machine. Now firmly established, the plaster machine keeps demonstrating its versatility. Gypsum plaster mixed with sand, lightweight aggregates, etc., can be pumped through this machine. This is quite a departure from the age-old idea that all plaster must be hand applied.

## Iron Ore:

Year '56 a good one . . .

A record set.

F. G. Pardee  
President

The Lake Superior Iron Ore Assn.

The year 1956 was an active one for the iron ore industry. Produc-

tion and shipments were high except during July. A record was set in the tonnage of ore imported. A number of new mines have been opened and many explorations have been started. The preparation of iron ore for use in the furnaces has received a great deal of attention during the year.

The shipment of iron ore down the Great Lakes has, for a long time, been used as one measure of the demand for iron ore and the response of the mines to this demand. Up to December 1, 1956, the shipments from U. S. and Canadian mines in the Lake Superior district came to 76,052,603 gross tons, which compared with the 87,275,463-tons shipped to the same date last year.

Up to July 1, 1956, iron ore shipments from the other districts outside of the Lake states were about a million tons ahead of 1955. Final tabulations of 1956's totals, should compare favorably with the nearly 22-million tons that were moved in 1955.

For next year there will unquestionably be a large demand for iron ore if the predicted steel tonnages are met. This will take full production from the United States mines plus record tonnages from Canada and other foreign sources to supply the demand of the furnaces.

## Gray Iron:

Founders are cautiously optimistic for 1957.

J. S. Parrish  
President

Gray Iron Founders Society

The gray iron founders are cautiously optimistic both for 1957 and the future. In total shipments, the drop of approximately 400,000-tons in 1956 from 1955's near record 14.8-million tons was accounted for almost entirely by the reduced volume of new cars and trucks. Most other



## for Flat Parts in rugged service



## consider steel plate

Parts that must be strictly flat — of guaranteed accurate thickness and tough — often can be stamped from steel plate, economically, with excellent results. Here are a few examples — similar, perhaps, to some you use or are planning.

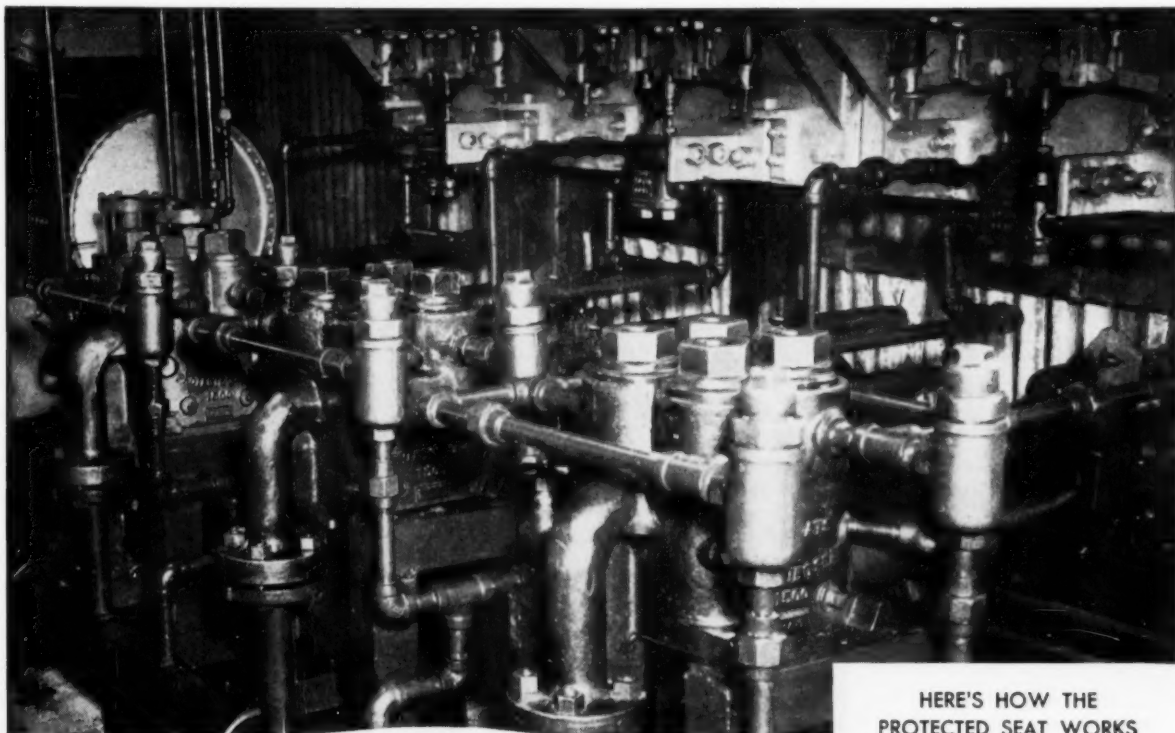
Heavy duty Washers      Rings  
Discs or Circles      Gear Blanks  
Sprocket Blanks      Special Bosses      Drive Plates  
Special Shapes, your own design

If your steel part starts with a flat disc, for instance — we have stock dies for almost every fractional diameter up to 26½ inches. The heaviest blanking press in the Mid-west accommodates these dies, or those for special shapes to your design, stamping from plate 3/16" to 1-1/4" thick, depending on area.

Extra operations available: flame cutting of thicker plate, holes punched (up to .003" accuracy), machining, grinding, drilling and heat treating. Thirty-five hundred ton inventory of mild and high carbon plate . . . Send us your specifications — let us quote you on price and delivery.

## Cleveland Pressed Products Corporation

6716 Union Ave., Cleveland 5, Ohio • VULcan 3-7900



for  
fast,  
smooth,  
accurate  
control

# Specify **HOMESTEAD** *Protected Seat* **HYDRAULIC OPERATING VALVES**

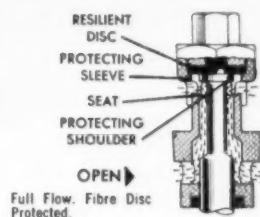
RECORDS OF 6 TO 18 MONTHS' MAINTENANCE-FREE SERVICE ARE COMMON

It will pay you to get the facts about HOMESTEAD Protected-Seat HYDRAULIC OPERATING VALVES—the valves that give you quick, finger-tip control for moving or positioning any single-acting or double-acting hydraulic piston. The exclusive Homestead Protected-Seat reduces fluid velocity during the closing operation to practically zero. Thus seat erosion and resultant leakage, the most frequent cause of shut-downs and lost production time, is eliminated. Records of 6 to 18 months continuous service without maintenance are common.

**HOMESTEAD**  
VALVE MANUFACTURING COMPANY  
"Serving Since 1892"

P.O. BOX 23, CORAOPOLIS, PA.

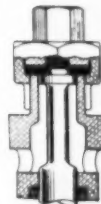
## HERE'S HOW THE PROTECTED SEAT WORKS



### CLOSING OR OPENING

Flow practically stopped by close fitting sleeve and stem shoulder, before seat and disc make contact. This prevents "wire drawing." Trapped water cushions closing, dampens hydraulic shock.

**CLOSED**  
Protected resilient disc against metal seat assures drop-tight seal, long life, accurate control, and low maintenance.



For full particulars, **MAIL THE COUPON TODAY.**

Please send me without obligation, complete data on PROTECTED-SEAT HYDRAULIC OPERATING VALVES.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_ TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

January 3, 1957

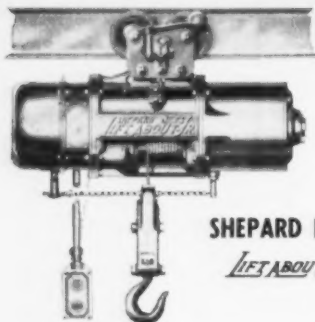
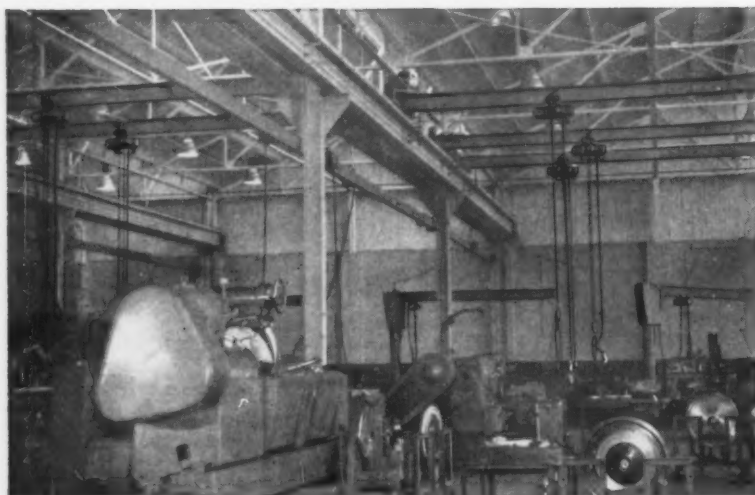
311

**SHEPARD NILES**

*LIFTABOUT-Jr.*

# EASES WORK

... on your production line



## KEEP PRODUCTION on the move

... with a Shepard Niles Liftabout-Jr. This husky, light-service hoist does all your back-breaking lifting ... enables one man or woman to move more material at lower cost.

Low in cost, the Liftabout-Jr. features dependable wire rope hoisting. Available in 250, 500, 1000 or 2000 lb. capacities ... parallel or cross-mounted with bolt, hook or trolley suspension.

**SHEPARD NILES**  
*LIFTABOUT-Jr.*



**HOISTS**  
Operated from Cab  
Floor or Pulpit



- Write for latest Liftabout-Jr. Bulletin ... and ask to have a Shepard Niles representative call.

**America's Most Complete Line  
of Cranes and Hoists  
Since 1903**

**SHEPARD NILES**  
CRANE AND HOIST CORPORATION

1478 Schuyler Ave., Montour Falls, N.Y.

## WHAT'S AHEAD

segments of the industry increased in 1956. Expanding business is forecast for 1957 in most of our customer industries such as automotive, utilities, machine tools and general machinery. Accordingly, we expect to ship 15 million tons of gray iron castings in 1957.

While new materials have cut into some of our markets since the war, the family of gray irons and casting processes have been increasing also, and we now have more to offer buyers. As a result there is an increasing amount of conversion to gray iron castings. Another reason for conversion to gray iron is found in the tendency toward concentration of production in fewer, more efficient foundries.

The average gray iron foundry shipped approximately 50-per cent more tonnage in 1956 than in 1947.

Mr. Parrish is President, Richmond Foundry & Mfg. Co., Inc., Richmond, Va.

## Cranes:

**Electric overhead crane makers  
have qualified optimism.**

J. H. Peritz  
Executive Secretary  
Electric Overhead Crane Institute


The electric overhead crane industry faces 1957 with a qualified optimism. The picture is bright in some respects but there are some gray and dark aspects that may have effects that are difficult to estimate.

In 1956, billed sales and booked sales, the industry exceeded the year 1955 by expected comfortable margins. It should be remembered, however, that 1956 was by no means a banner year.

Backlog figures have been gradually increasing as the plans of industrial expansion goals leave the drawing board stage and are translated into firm commitments. In any survey of a heavy equipment industry such as electric overhead







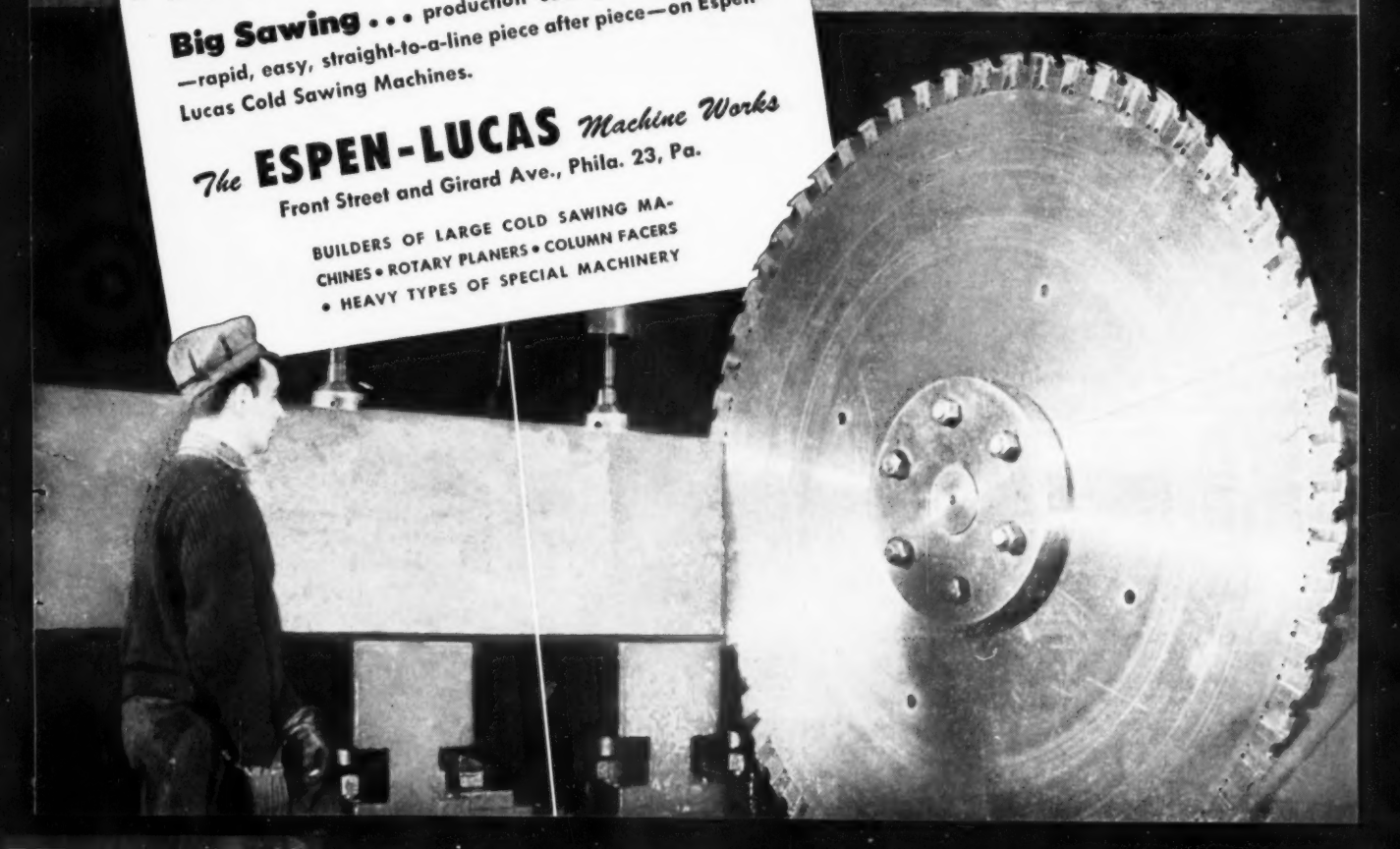
*Saves Time... Cuts Costs*

**Rotary Planer** . . . do milling jobs in one-third to one-seventh of time on an Espen-Lucas Rotary Planer.

**Big Sawing** . . . production cutting of large stock—rapid, easy, straight-to-a-line piece after piece—on Espen-Lucas Cold Sawing Machines.

*The* **ESPEN-LUCAS** *Machine Works*  
Front Street and Girard Ave., Phila. 23, Pa.

BUILDERS OF LARGE COLD SAWING MACHINES • ROTARY PLANERS • COLUMN FACERS  
• HEAVY TYPES OF SPECIAL MACHINERY



cranes, due consideration must be given to lead-time factors, and the combination of a sizable backlog plus lead-time indicates that shipments through 1957 should be maintained at a high level.

The full extent of business expansion has not yet been reached and there is every indication that new orders in 1957 should keep pace with the anticipated growth in general building programs.

Optimism must be qualified by the unsettled situation on plate and structural procurement. The highway and super-tanker programs will inject fantastic demands into a market that is already tight. The crane industry is now facing serious difficulties which may be compounded unless there is a sizable increase in plate and structural supply.

The electric overhead crane in-

dustry has not expanded appreciably in the past year for experience has shown that there is sufficient capacity to care for demand if procurement requirements can be met and delivery requirements are normal.

## Rail Steel:

**Year '57 should be much better than '56.**

O. W. Irwin  
President

Rail Steel Bar Assn.

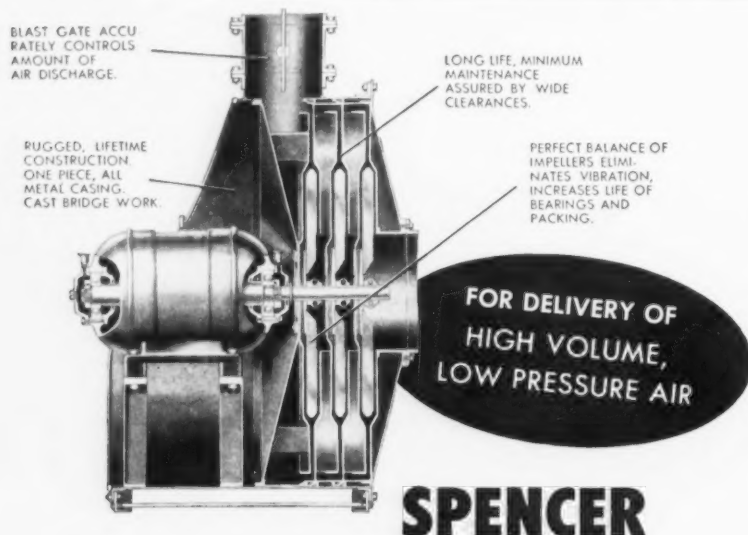
In the rail steel industry the outstanding 1956 problem was the amount of raw material, rerolling rails, which was exported, primarily to Mexico.

In the late '40's the Class I Railroads disposed of over 800,000-tons of used rails per year, scrap and rails for rerolling. In the last three years that quantity has dropped below 600,000-tons. In 1956, for the first time in the history of the rail steel industry, exports of rerollers amounted to over 15-pct of the total available supply. When it is considered that these used rails are also raw material for foundries and for open hearths, it is not surprising that the incentive of higher export prices has raised the domestic price to unprecedented levels. For a part of 1956 a ton of rerollers paid for nine-tenths of a ton of new rails.

Fortunately, export licenses were restricted in the last quarter of 1956. However, at this writing, the industry has no assurance that these restrictions on export will be continued into 1957.

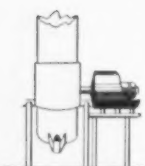
These decreases in available raw material mean that the members of the rail steel industry are "holding their own" by installing electric furnaces. Some members have also turned to axles.

In contrast with the raw material problems, the available business has been higher in 1956 than for any preceding year. The partial switch to axles and to electric furnace steel has assisted the members of the rail steel industry to complete the year with little reduction in total shipments.



## SPENCER Turbo-Compressors are PREFERRED

by Equipment Manufacturers and for Replacement



CUPOLAS



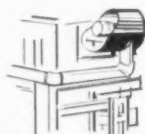
ROLLING MILLS

You'll see Spencer "blowers" . . . with the familiar "sugar-scoop" design . . . on a wide variety of equipment in foundries and metal-working plants everywhere.

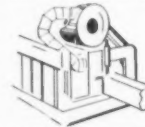
Performance is the reason. Experienced metals men know you just can't beat the rugged reliability, the proved-in-use performance of a Spencer Turbo.

Simple, built-to-last construction . . . mounting that requires no special foundation, no bolting down . . . discharge in any of eight positions . . . quiet operation . . . use of power proportional to amount of air used . . . these are a few of the reasons why SPENCER is preferred.

Capacities from 1/3 HP to 1,000 HP, up to 20,000 CFM, 4 oz. to 10 lbs. pressure.



ANNEALING FURNACES



CONVEYOR WASHERS



OTHER QUALITY  
SPENCER PRODUCTS

**The SPENCER  
TURBINE COMPANY**  
HARTFORD 6, CONNECTICUT



STATIONARY  
VACUUM  
SYSTEMS



PORTABLE  
VACUUM  
CLEANERS



PNEUMATIC  
CONVEYING  
SYSTEMS



*Brush wire, crimped (as shown) or straight, now produced in multiple strand, and furnished in coils or straight banks depending on wire size.*

## ***How a new idea in wire cleaned up a brush production problem***

● Maybe you can profit by the kind of interest and action applied to customers' problems by the Worcester Wire Works Division of National-Standard. Take wire brush manufacture for example . . .

Until recently, brush manufacturers had to cut through a coil of wire, then gather by hand and by guesswork the approximate number of wires for the type of brush in production. Naturally this involved a lot of cut-off waste, plus the wire lost through faulty guesswork.

Now, to overcome this waste, Worcester Wire Works

has developed ways to produce and furnish wire in pre-determined bunches (up to 400 wires per bunch) with *exactly* the right number of wires for a given brush. Much costly loss is eliminated, more brushes are produced per pound of wire, and production is speeded.

The point is, Worcester Wire Works people specialize in more than quality wire. They also specialize in the kind of service and exploration that time and again cuts costs for customers. Better check with them on your wire needs. You'll like the way they do business.

**NATIONAL-STANDARD COMPANY • NILES, MICHIGAN**  
Tire Wire, Stainless, Fabricated Braids and Tape

**ATHENIA STEEL DIVISION • CLIFTON, N. J.**  
Flat, High Carbon, Cold Rolled Spring Steel

**REYNOLDS WIRE DIVISION • DIXON, ILLINOIS**  
Industrial Wire Cloth



**WAGNER LITHO MACHINERY • JERSEY CITY, N. J.**  
Special Machinery for Metal Decorating

**WORCESTER WIRE WORKS DIVISION • WORCESTER, MASS.**  
Round and Shaped Steel Wire, Small Sizes

## Air Conditioning:

**Refrigeration air-conditioning had great '56, see better '57.**

Geo. S. Jones, Jr.  
Managing Director

Air-Conditioning and Refrigeration Institute

Air-conditioning, newcomer to the nation's family of big consumer industries, made its biggest imprint to date in 1956. But 1957 will see an even greater public demand for its comforts and its positive economic goods. Its future appears to be virtually without limit.

At the same time, mechanical refrigeration, the industry out of which air-conditioning was born, continued to entrench itself during



1956. New processes of food preparation and merchandising alone promise to make its contributions even greater in the next few years.

To look at the air-conditioning field first, around 1,700,000 room air-conditioners were sold during 1956. This is a figure somewhat below earlier forecasts because of below-average temperatures over most of the country during July and August. It compares with about 1,270,000 in 1955, and 30,000 in 1946, the first year after World War II, when postwar production had just started to get under way. In 1957, sales of these units probably will reach well above the million and three-quarter mark.

No accurate figures are available as to central installations in homes during 1956, but estimates range up to 170,000 or more, compared with 130,000 such installations in 1955.

Indications by Federal Govern-

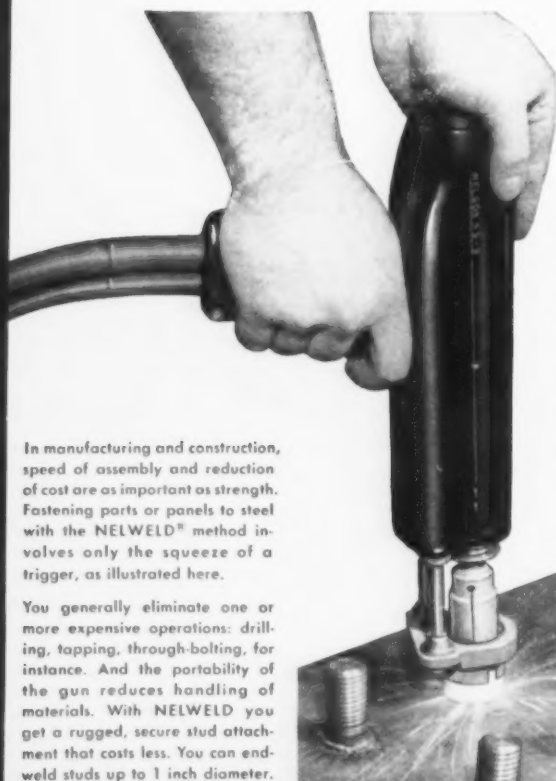
ment agencies (FHA and VA) that some thought might be given to liberalizing financing of new air-conditioned homes and air-conditioning equipment for existing homes, led to a belief in some quarters that the percentage of air-conditioned homes in the country might increase even more rapidly than had been forecast. However, at the end of 1956, no announcements had been forthcoming from the Federal agencies.

## Magnesium:

**Improvements will push production near 80,000-tons.**

Jerry Singleton  
Executive Secretary  
The Magnesium Assn.

Announcement of a second primary producer in 1956, with some indication that this new production may "come in" before the close of



In manufacturing and construction, speed of assembly and reduction of cost are as important as strength. Fastening parts or panels to steel with the NELWELD® method involves only the squeeze of a trigger, as illustrated here.

You generally eliminate one or more expensive operations: drilling, tapping, through-bolting, for instance. And the portability of the gun reduces handling of materials. With NELWELD you get a rugged, secure stud attachment that costs less. You can end-weld studs up to 1 inch diameter.

**But something's gotta give!**

Beat an end-welded NELSON stud with all your might, and it will shear in two... *but the weld will not break loose!*

This familiar demonstration, often seen at trade shows and conducted in the field, is conclusive proof that whatever you do... hammer, twist, tug or pry, a NELSON stud gives you welded strength in excess of the stud strength.

A NELSON Field Engineer will conduct this demonstration at your convenience. Just send in the coupon at the right.



**NELSON STUD WELDING....**

**YOU CAN'T BREAK A**





## WHAT'S AHEAD

1957, was the high point of the year 1956. Where 1956 production missed the 68-thousand-ton plus mark due to strike-lost production, it is expected that 1957 production by existing facilities will near 80-thousand tons due to improvements known to have added to capacity. This tonnage will be upped by any new capacity brought into operation during the year.

Nineteen hundred fifty-six has been a good year for magnesium; all indications point to continued growth during 1957. Accelerated acceptance of magnesium on the one hand and technological development on the other have combined to brighten future prospects. Nevertheless, it should not be assumed that things are fine for all segments of the industry for sand casting foundries have been fighting to hold even, while die casters suffered from the decline in the automotive industry's production. Nevertheless, production and ship-

ment of all classes of product are well up—production by nearly 14-pct; mill products by approximately 20-pct; and castings by 10-pct, as anode tonnage grows at a steady pace.

## Gas Appliances:

**Gas appliance industry sees gains in future.**

By Julius Klein  
President

Gas Appliance Manufacturers Association

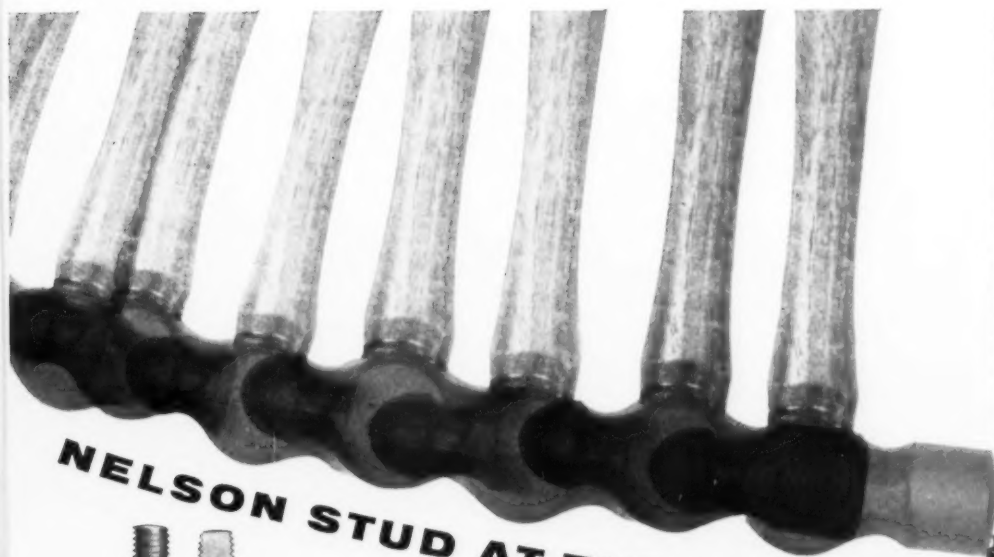
Final figures for 1956 indicate that the gas appliance and equipment industry, on balance, surpassed its record 1955 total in physical volume and dollar sales. Our expectation is that we can remain at the same lofty plateau, and perhaps make further gains, in 1957.

"Beating last year" is accepted as a matter of course in many sectors. But the gas appliance and

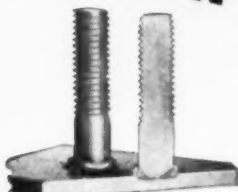
equipment industry's 1956 achievement is a most noteworthy one, and its 1957 goals are most ambitious, in view of particular conditions. We have had to face a decline in housing starts, tight money, and cost increases at times when market conditions made it difficult or impossible to pass them along.

Even so, automatic gas water heaters appear about to set a new sales mark near the 3,000,000-a-year level. Gas boilers for residential heating seem assured a new record; gas furnace sales for 10 months of 1956 are less than 2-pct away from their spectacular 1955 total and gas conversion burners show a decline of but 5-pct. Gas ranges apparently will top the 2,000,000 mark for the 10th consecutive year, not counting built-in units, where gains have in considerable measure offset a 10-pct or so decline in free standing models.

Mr. Klein is President, Caloric Appliance Corp., Philadelphia.



# NELSON STUD AT THE WELD!



Cross section shows why a NELSON stud stays put: the arc forms a molten pool of steel into which the stud is plunged for complete fusion across base of stud.

Send for complete information about the  
**\$1,500 GREGORY AWARD**  
for the most significant contribution in the field  
of stud welding.

**Division of Gregory Industries, Inc., Lorain, Ohio**

**MAIL THIS COUPON  
TODAY!**

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**NELSON STUD  
WELDING**  
Division of Gregory Industries  
LORAIN, OHIO

- ☐ Please have a Field Engineer conduct this demonstration in our plant.
- ☐ Please send complete information on the GREGORY AWARD Competition.
- ☐ Please put my name on your mailing list to receive the NELWELDER, the magazine of Stud Welding.

## TRADE ASSOCIATIONS AND TECHNICAL SOCIETIES

Air Conditioning and Refrigeration Institute  
1346 Connecticut Ave., N.W. Washington 6, D. C.  
Managing Dir.: Geo. S. Jones, Jr.

Aircraft Industries Assn. of America  
610 Shoreham Bldg., Washington 5, D. C.  
Pres.: Admiral DeWitt C. Ramsey, USN (Ret.)

Air Moving & Conditioning Assn., Inc.  
2159 Guardian Bldg., Detroit 26, Mich.  
Exec. Vice Pres.: L. O. Monroe

A list of some 200 Professional  
and Technical Societies and Trade  
Associations in Metalworking and  
Metal Production.

Alloy Casting Institute  
32 Third Ave., Mineola, N. Y.  
Exec. Vice-Pres.: E. A. Schoeller

Aluminum Assn.  
420 Lexington Ave., New York 17, N. Y.  
Sec.: Donald M. White

Aluminum Smelters Research Institute  
20 N. Wacker Drive, Chicago 6, Ill.  
Sec.: Carl H. Burton

Aluminum Wares Assn.  
1506 First National Bank Bldg., Pittsburgh 22, Pa.  
Secy.: Stuart J. Swenson

Aluminum Window Manufacturers Assn.  
75 West St., New York 6, N. Y.  
Secy.: & Counsel: Herbert S. Blake, Jr.

American Boiler and Affiliated Industries  
15 Park Row, New York 38, N. Y.  
Mgr.: Henry E. Aldrich

American Boiler Mfrs. Assn. and Affiliated Industries  
1571 W. 117th St., Cleveland 7, Ohio  
Secy.: A. C. Baker

American Bureau of Metal Statistics  
50 Broadway, New York, N. Y.  
Director: R. R. Eckert

American Coke & Coal Chemicals Institute  
711 Fourteenth St., N.W., Washington 5, D. C.  
President: Samuel Weiss

American Die Casting Institute  
366 Madison Ave., New York 17, N. Y.  
Secy.: David Laine

American Electroplaters' Society  
445 Broad St., Newark 2, N. J.  
Exec. Secy.: P. Peter Kovatis

American Foundrymen's Society  
616 S. Michigan Ave., Chicago 5, Ill.  
Gen'l. Mgr.: W. W. Maloney

American Gas Assn.  
420 Lexington Ave., New York 17, N. Y.  
Managing Dir.: C. S. Stackpole

American Gear Manufacturers Assn.  
One Thomas Circle, Washington 5, D. C.  
Exec. Secy.: John C. Sears

American Hardware Manufacturers Assn.  
342 Madison Ave., New York 17, N. Y.  
Secy.: A. I. Faubel

American Home Laundry Manufacturers' Assn.  
20 N. Wacker Dr., Chicago 6, Ill.  
Secy.: Arthur L. Faubel

American Home Laundry Manufacturers' Assn.  
20 N. Wacker Dr., Chicago 6, Ill.  
Exec. Dir.: Guenther Baumpart

American Hot Dip Galvanizers Assn., Inc.  
1806 First National Bank Bldg., Pittsburgh 22, Pa.  
Secy.: Stuart J. Swenson

American Institute of Chemical Engineers  
25 W. 45th Street, New York, N. Y.  
Exec. Secy.: V. J. Van

American Institute of Mining, Metallurgical, & Petroleum Engineers  
29 W. 39th St., New York 18, N. Y.  
Secy.: Ernest Kirkendall

American Institute of Steel Construction, Inc.  
101 Park Ave., New York 17, N. Y.  
Exec. Vice-Pres.: L. Abbott Post

American Iron and Steel Institute  
350 Fifth Ave., New York 1, N. Y.  
Exec. Dir.: Max D. Howell

American Machine Tool Distributors Assn.  
1900 Arch St., Philadelphia 3, Pa.  
Gen'l. Mgr.: James C. Kelley

American Manganese Producers Assn.  
National Press Bldg., Washington 4, D. C.  
Pres.: J. C. Adkerson

American Mining Congress  
1200 18th St., N.W., Washington 6, D. C.  
Exec. Vice-Pres.: Julian D. Conover

American Ordnance Assn.  
704 17th St., N.W., Mills Bldg. Wash. 6, D. C.  
Exec. Vice-Pres.: L. A. Codd

American Railway Car Institute  
19 East 47th St., New York 17, N. Y.  
Pres.: Lester N. Selig

American Society for Metals  
7301 Euclid Ave., Cleveland 3, Ohio  
Secy.: W. H. Eisenman

**FOUND WHERE AIRCRAFT POWER AND CONTROLS TAKE SHAPE**

## GRAND RAPIDS GRINDERS

**PRECISION IS PARAMOUNT** in the manufacture of components for aircraft power and control. That's why these makers of precision parts have Grand Rapids Grinders in their toolrooms — for the utmost in precision grinding.

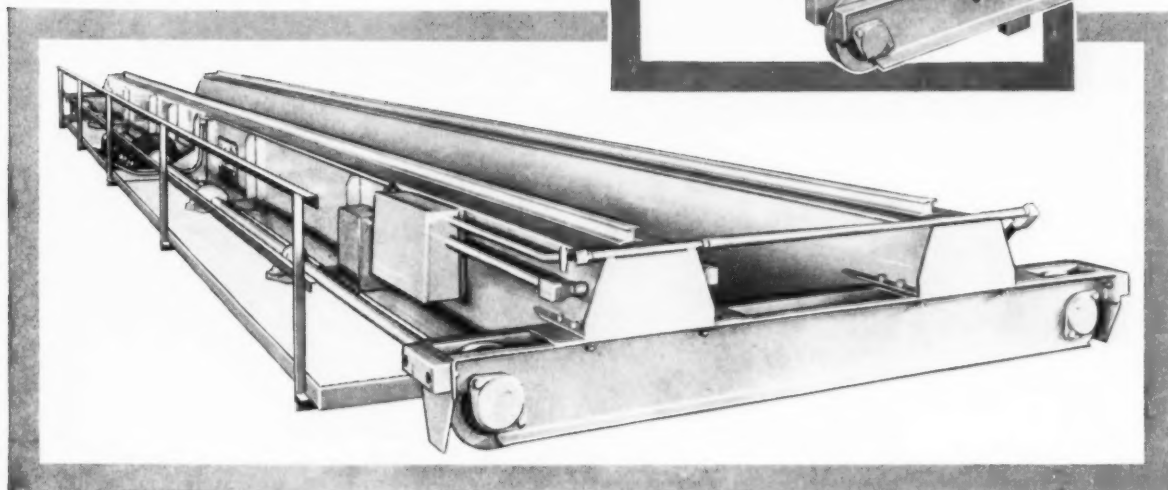
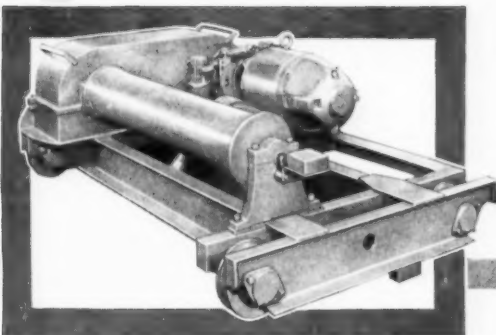
Model No. 55, for example, features one-piece column and base for permanent vibrationless rigidity. Longitudinal travel table and cross feed are hydraulically actuated. Wheel head has powered rapid vertical travel. And it's faster than any other grinder of this type and size . . . with variable table speed up to 125 fpm.

With these built-in precision features typical of all Grand Rapids Grinders, it's no wonder they're found in leading toolrooms.

**GRAND RAPIDS NO. 55 HYDRAULIC FEED SURFACE GRINDER.** Table speed up to 125 fpm. Working surface of table is 12' x 36". Vertical movement of wheel head is 18". Preloaded ball bearing spindle geared for life. Spindle speeds 1925 and 2500 rpm.

**GALLMEYER & LIVINGSTON COMPANY**  
400 Straight Ave., S.W., Grand Rapids, Michigan

# "Shaw-Box" TYPE "SC"



## ...the Customized Crane that Saves You Money

Combine the preferences of thousands of crane users. Add the know-how of the organization with the most crane building experience. Apply advanced standardization and assembly line techniques. Result: Fully tested, modern "Shaw-Box" Type "SC" Cranes of 5 to 20 tons for general industrial service.

Type "SC" Crane Trolleys are standard units, but we have pre-engineered most variations for certain specific applications. Thus you can have a customized Type "SC" Trolley adapted to your needs without the high cost of a tailor-made design.

The Type "SC" Trolley provides a higher hook lift than other unmodified standard top-running trolleys. All parts are extremely rugged and rigid to withstand impact and shock loads. The simply designed, strong hoist mechanism is precision built for long, quiet operation and little maintenance.

Special design features assure true vertical lift and long rope life. Traversing is always smooth; no excessive drift. Two brakes hold and control the load safely.

The Type "SC" Bridge contributes substantially to the low cost of the complete crane and its operation. We build into it design and construction features found only in the most expensive cranes. Double web box section girders eliminate whipping and skewing even under the severest conditions. Direct drive bridge machinery is equipped with anti-friction bearings and all gearing is immersed in oil. Rotating wheel axles assure long life.

There's a Shaw-Box Type "SC" Crane to satisfy your requirements completely — in reliability, in safety, in economical operation. And, your investment will be less than you think. Let us give you complete information without obligation.

# "Shaw-Box" CRANES

S7E-4



**MANNING, MAXWELL & MOORE, INC.**

SHAW-BOX CRANE & HOIST DIVISION

382 West Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and "LOAD LIFTER" Cranes, "BUDGIT" and "LOAD LIFTER" Hoists and other lifting specialties. Other Divisions produce "ASHCROFT" Gauges, "HANCOCK" Valves, "CONSOLIDATED" Safety and Relief Valves, "AMERICAN" and "AMERICAN-MICROSEN" Industrial Instruments, and Aircraft Products.

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.

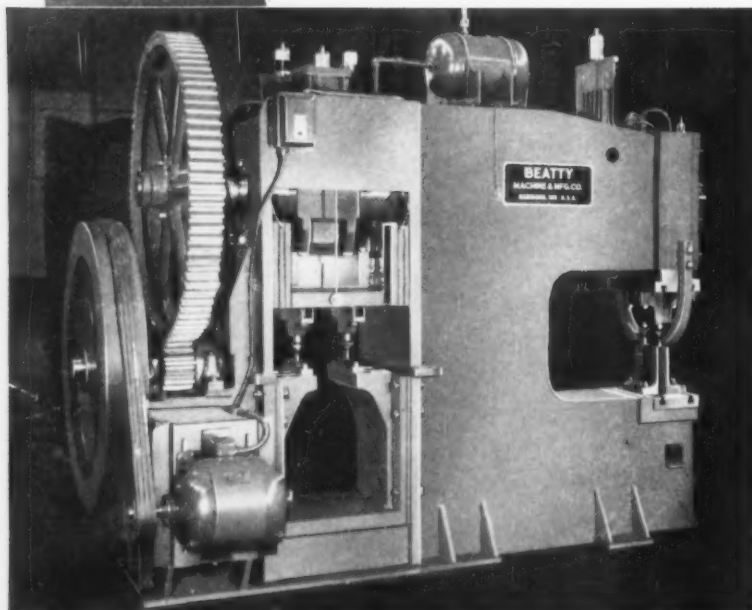


"Shaw-Box" Cable Reel. Automatically keeps insulated conductor cable taut on crane and hoist magnets, on soaking pit carriages, mill machinery and machine tools. Spring cannot break.

# BEATTY

NO. 7 DETAIL  
BEAM  
PUNCH

## New Detail Beam Punch Speeds Single-Hole Punching



Web Punch End One set single gag punch tools



Flange Punch End Two sets of single gag punch tools

In just three passes, instead of the usual five, this Beatty Detail Beam Punch punches flanges on either side of the webs of beams, as well as webs of beams, angles, channels and plates—eliminates the end-for-end turning of beams.

Incorporating an entirely new design that speeds single-hole punching, this compact new punch saves floor space and reduces your equipment investment by handling the work of three ordinary machines. Mechanically driven, it is of 100-ton capacity, open-throat and guillotine type, and will punch up to a 1 1/4" hole through 1" mild steel.

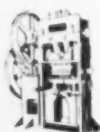
Write For Full Details



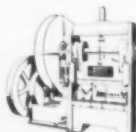
# BEATTY

MACHINE & MFG. CO.

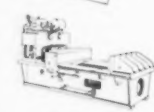
936 150th St.  
HAMMOND, IND.



Guillotine Beam (Flange) Punch



Guillotine Bar Shear



Horizontal Hydraulic Bulldozer

### TRADE GROUPS

- American Society of Testing Materials  
1916 Race St., Philadelphia 3, Pa.  
Exec. Secy.: Robert J. Painter
- American Society of Lubrication Engineers  
84 E. Randolph St., Chicago 1, Ill.  
Admin. Secy.: William P. Youngclaus, Jr.
- American Society of Mechanical Engineers  
20 W. 39th St., New York 18, N. Y.  
Secy.: C. E. Davies
- American Society of Tool Engineers  
1007 Puritan Ave., Detroit 38, Mich.  
Exec. Secy.: Harry E. Conrad
- American Standards Assn.  
70 E. 45th St., New York 17, N. Y.  
Managing Dir.: G. F. Hussey
- American Steel Warehouse Assn., Inc.  
442 Terminal Tower, Cleveland 13, Ohio  
Exec. Secy.: Robert G. Welch
- American Supply & Machinery Mfrs. Assn., Inc.  
2130 Keith Bldg., Cleveland 15, Ohio  
Business Mgr.: W. B. Thomas
- American Tin Trade Assn., Inc.  
24 State St., N. Y. 4  
Secy.: Joan Hill
- American Welding Society  
33 W. 39th St., New York 18, N. Y.  
National Secy.: J. G. Magrath
- American Weldment Manufacturers Assn.  
332 S. Michigan Ave., Chicago 4, Ill.  
Pres.: Byrne Marcellus
- American Zinc Institute, Inc.  
60 E. 42nd St., New York 17, N. Y.  
Exec. Vice Pres.: J. L. Kimberley
- Anti-Friction Bearing Manufacturers Assn., Inc.  
60 E. 42nd St., New York 17, N. Y.  
Secy.-Mgr.: H. O. Smith
- Assn. of American Battery Manufacturers  
70 Cherry St., Akron, Ohio  
Exec. Secy.: V. L. Smithers
- Assn. of American Railroads  
Transportation Bldg., Washington 6, D. C.  
Pres.: Wm. T. Faricy
- Assn. of Consulting Chemists and Chemical Engineers  
50 E. 41st St., New York 17, N. Y.  
Secy.: R. T. Baldwin
- Assn. of Iron and Steel Engineers  
1010 Empire Bldg., Pittsburgh 22, Pa.  
Managing Dir.: T. J. Ess
- Assn. of Lift Truck & Portable Elevator Mfrs.  
P. O. Box 66, Medfield, Mass.  
Exec. Secy.: J. A. Goldthwait
- Assn. of Roller and Silent Chain Manufacturers  
3343 Central Ave., Indianapolis 5, Ind.  
Exec. Secy.: A. L. Taylor
- Assn. of Sprocket Chain Manufacturers  
11 S. La Salle St., Chicago 3, Ill.  
Exec. Secy.: Mark L. Patterson
- Automobile Manufacturers Assn.  
320 New Center Bldg., Detroit 2, Mich.  
Managing Dir.: William J. Cronin
- Automotive Parts Manufacturers Assn.  
16219 Meyers, Detroit 35, Mich.  
Gen. Mgr.: Frank Rising
- Automotive Tool & Die Mfrs. Assn.  
103 Pallister Ave., Detroit 2, Mich.  
Managing Dir.: Chester A. Cahn
- Band Saw Mfrs. Assn.  
350 Madison Ave., New York 17, N. Y.  
Managing Dir.: R. C. Bell, Jr.
- Brass and Bronze Ingot Institute  
308 W. Washington St., Chicago 6, Ill.  
Secy.-Mgr.: Isadore Glueck
- Brass Forging Assn.  
420 Lexington Ave., New York 17, N. Y.  
Mgr.: T. E. Veltfort
- Bright Wire Goods Manufacturers Service Bureau  
53 Park Pl., New York 7, N. Y.  
Secy.: George P. Byrne
- Broaching Tool Institute  
74 Trinity Place, New York 6, N. Y.  
Secy.: Montgomery S. Blake



Can Manufacturers Institute, Inc.  
Shoreham Bldg., Washington 5, D. C.  
Exec. Vice-Pres.: H. Ferris White  
60 East 42nd St., New York 17, N. Y.  
Secy.-Treas.: Clifford E. Sifton

Cast Iron Pipe Research Assn.  
122 S. Michigan Ave., Chicago 3, Ill.  
Managing Dir.: Thos. F. Wolfe

Cast Iron Pressure Pipe Institute  
425 13th St., N.W., Warner Bldg., Wash. 4, D. C.  
Exec. Vice-Chairman: S. E. Linderman

Caster and Floor Truck Manufacturers Assn.  
27 East Monroe St., Chicago 3, Ill.  
Exec. Secy.: Harry P. Dolan

Chain Institute, Inc.  
111 Washington St., Chicago 2, Ill.  
Secy.: R. L. Ekstrand

Collapsible Tube Manufacturers Assn.  
19 W. 44th St., New York 36, N. Y.  
Secy.: Lester B. Platt

Compressed Air and Gas Institute  
122 E. 42nd St., New York 17, N. Y.  
Secy.: Frank P. Anderson

Compressed Gas Assn., Inc.  
11 W. 42nd St., New York 36, N. Y.  
Secy.: F. R. Fetherston

Concrete Reinforcing Steel Institute  
38 S. Dearborn St., Chicago 3, Ill.  
Managing Dir.: H. C. Delzell

Convector Manufacturers Assn.  
2159 Guardian Bldg., Detroit 26, Mich.  
Secy.: R. E. O'Rourke

Conveyor Equipment Manufacturers Institute, Inc.  
No. 1 Thomas Circle, Washington 5, D. C.  
Exec. Vice-Pres.: R. C. Sollenberger

Copper and Brass Research Assn.  
420 Lexington Ave., New York 17, N. Y.  
Secy.: C. H. Pihl

Copper & Brass Warehouse Assn.  
Suite 105, Investment Bldg., 15th & K Sts., N.W.  
Washington 5, D. C.  
Exec. Secy.: G. W. Proffitt

Copper Institute  
50 Broadway, New York 4, N. Y.  
Secy.: R. R. Eckert

Cutting Die Institute  
1643 National Bank Bldg., Detroit 26, Mich.  
Exec. Mgr.: M. R. Liles

Cutting Tool Manufacturers Assn.  
416 Penobscot Bldg., Detroit 26, Mich.  
Exec. Secy.: Martin J. Ewald

Diamond Core Drill Manufacturers Assn.  
122 E. 42nd St., New York 17, N. Y.  
Secy.: Frank P. Anderson

Diesel Engine Manufacturers Assn.  
1 N. LaSalle St., Chicago 2, Ill.  
Exec. Dir.: Harvey T. Hill

Domestic Water Tank Manufacturers Council  
c/o Dickler & Halbert Counsel  
10 E. 40th St., N. Y. 16, N. Y.

Drop Forging Assn.  
419 S. Walnut St., Lansing 33, Mich.  
Secy.-Treas.: R. Marcus

Edison Electric Institute  
420 Lexington Ave., New York 17, N. Y.  
Managing Dir.: Edwin Vennard

Electric Furnace Steel Committee, Iron & Steel Div.,  
American Institute of Mining, Metallurgical &  
Petroleum Engineers, Inc.  
29 W. 39th St., New York 18, N. Y.  
Secy.: R. W. Shearman

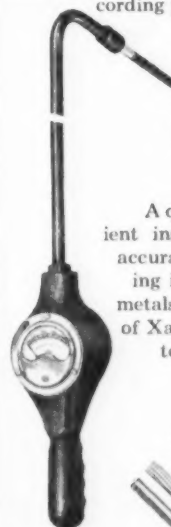
Electric Hoist Manufacturers Assn.  
71 W. 35th St., New York 1, N. Y.  
Secy.: E. Donald Tolles

## PRECISION TEMPERATURE measurement and control



### GORDON XACTLINE

Controls temperature automatically within a fraction of a degree in any heat process. A complete factory-assembled unit ready for installation anywhere. Can be used with any existing indicating or recording pyrometer controller—regardless of age.



### GORDON XACTEMP Hand Pyrometer

A quality-built, convenient instrument for quick, accurate temperature reading in molten nonferrous metals. Also, other models of Xactemp for all-around temperature checking.

### GORDON SERV-RITE

Thermocouple Wire  
Thermocouple Extension Wire

Insulated in Gordon's own plant to assure consistent quality. All standard wire and insulations carried in stock for quick delivery. Other wires, in long or short runs, manufactured to specifications.

Full Particulars on Request



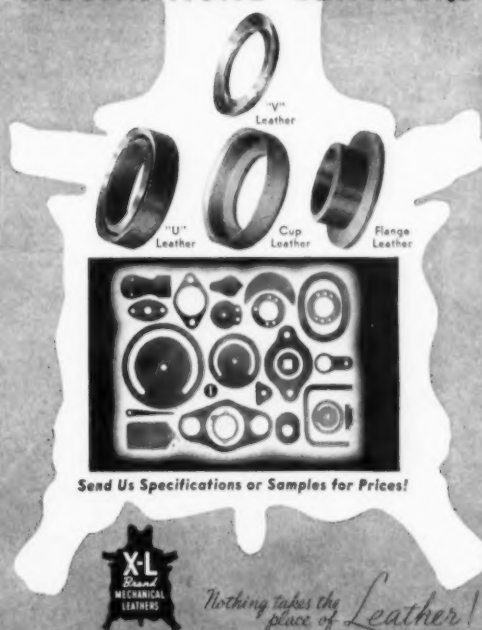
5607

### CLAUD S. GORDON CO.

Manufacturers • Engineers • Distributors  
Temperature Control Instruments • Thermocouples &  
Accessories • Industrial Furnaces & Ovens • Metal-  
lurgical Testing Machines

617 West 30th Street, Chicago 16, Illinois  
2017 Hamilton Avenue, Cleveland 14, Ohio

## HYDRAULIC PACKINGS AND MECHANICAL LEATHERS



Send Us Specifications or Samples for Prices!



*Nothing takes the place of Leather!*

**EXCELSIOR LEATHER WASHER MFG. CO.**  
ROCKFORD, ILLINOIS

Electric Overhead Crane Institute  
One Thomas Circle, Wash. 5, D. C.  
Exec. Secy.: J. H. Peritz

Electric Tool Institute  
318 Henrietta St., Kalamazoo, Mich.  
Exec. Mgr.: L. F. Woolman

Electrochemical Society  
216 W. 102nd Street, New York 25, N. Y.  
Secy.: Dr. H. B. Linford

Enamelled Utensil Manufacturers Council  
Keith Bldg., Cleveland 15, Ohio  
Mgr.: W. B. Thomas

Farm Equipment Institute  
608 S. Dearborn St., Chicago 5, Ill.  
Exec. Secy.: Robert A. Jones

Fine and Specialty Wire Manufacturers Assn.  
839 17th St., Washington 6, D. C.  
Secy.: Wm. A. Penrose

Forged Tool Society  
Law & Finance Bldg., Pittsburgh 18, Pa.  
Exec. Secy.: G. D. Shrum

Forging Manufacturers Assn.  
366 Madison Ave., New York 17, N. Y.  
Secy.: W. J. Parker

Formed Steel Tube Institute  
635-37 Hanna Bldg., Cleveland 15, Ohio  
Exec. Secy.: Jehu R. Derrickson

Foundry Equipment Manufacturers Assn.  
Suite 202, One Thomas Circle, Washington 5, D. C.  
Exec. Secretary: C. R. Heller

Foundry Supply Manufacturers Assn.  
1508 Law & Finance Bldg., Pittsburgh 19, Pa.  
Exec. Secy.: G. D. Shrum

Galvanized Ware Manufacturers Council  
Keith Bldg., Cleveland 15, Ohio  
Mgr.: W. B. Thomas

Gas Appliance Manufacturers Assn., Inc.  
60 E. 42nd St., New York 17, N. Y.  
Pres.: Julius Klein

Gasoline Pump Manufacturers Assn.  
420 Lexington Ave., New York 17, N. Y.  
Managing Dir.: Theon Wright

Gold Mining Assn. of America  
251 Kearney St., San Francisco 8, Calif.  
Mgr.: D. I. Segerstrom

Gray Iron Founders' Society, Inc.  
930 National City-E. 6th Bldg., Cleveland 14, Ohio  
Exec. Vice-Pres.: D. H. Workman

Grinding Wheel Institute  
2130 Keith Bldg., Cleveland 15, Ohio  
Mrgs.: Hunter-Thomas Associates

Hack Saw Manufacturers Assn. of America  
350 Madison Ave., New York 17, N. Y.  
Secy.: Robert C. Bell, Jr.

Hardware Cloth and Poultry Netting Institute  
74 Trinity Place, New York 6, N. Y.  
Secy.: Ralph W. Bacon

Heat Exchange Institute  
122 E. 42nd St., New York 17, N. Y.  
Secy.: Frank P. Anderson

Heating and Cooling Coil Manufacturers' Assn.  
2159 Guardian Bldg., Detroit 26, Mich.  
Secy.: R. E. O'Rourke

Hollow Metal Door and Buck Assn.  
501 Fifth Ave., New York 17, N. Y.  
Exec. Secy.: Sidney O. Raphael

Hydraulic Institute  
122 E. 42nd St., New York 17, N. Y.  
Secy.: Frank P. Anderson

Industrial Diamond Assn. of America, Inc.  
Box 175, Pompton Plains, N. J.  
Exec. Mgr.: Athos D. Leveridge

Industrial Fasteners Institute  
Terminal Tower, Cleveland 13, Ohio  
Pres.: V. J. Materson

Industrial Heating Equipment Assn., Inc.  
1145 19th St., N.W., Washington 6, D. C.  
Exec. Vice-Pres.: C. L. Ipsen

Industrial Safety Equipment Assn.  
420 Lexington Ave., N. Y. 17, N. Y.  
Secy.: V. P. Gopcevic

Industrial Truck Assn.  
900 "F" St., N. W., Washington 4, D. C.  
Managing Dir.: William Van C. Brandt

Industrial Wire Cloth Institute  
75 West St., New York 6, N. Y.  
Secy.: Ralph W. Bacon

Insect Wire Screening Bureau  
75 West St., New York 6, N. Y.  
Secy.: Ralph W. Bacon

Institute of Appliance Manufacturers  
Shoreham Hotel, Washington 8, D. C.  
Managing Dir.: Samuel Dunckel

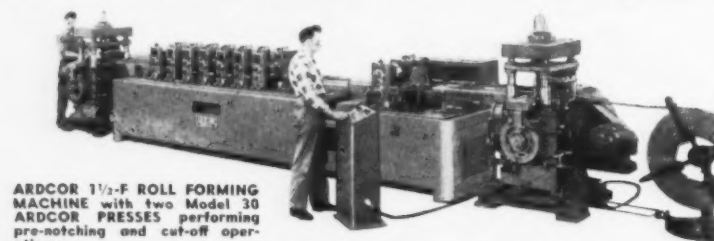
Institute of Boiler and Radiator Manufacturers  
608 Fifth Ave., New York 20, N. Y.  
Gen. Mgr.: R. E. Ferrv

Institute of Metals Div., AIME  
29 W. 39th St., New York 18, N. Y.  
Secy.: E. O. Kirkendall

Institute of Scrap Iron and Steel, Inc.  
1729 H St., N. W., Washington 6, D. C.  
Exec. Vice-Pres.: Edwin C. Barringer

Instrument Society of America  
313 6th Ave., Pittsburgh 22, Pa.  
Exec. Dir.: William H. Kushnick

## ARDCOR Roll Forming Mills



ARDCOR 1 1/2-F ROLL FORMING MACHINE with two Model 30 ARDCOR PRESSES performing pre-notching and cut-off operations.

### COMPARE These Exclusive Features . . .

UNIT DESIGN—spindles in self-contained SEPARATE HOUSINGS, with speed reducers. Easily removed or replaced.

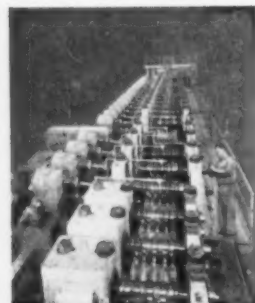
LARGE RANGE OF VERTICAL ADJUSTMENT through toggle gearing.

DOUBLE BEARING DESIGN OF DRIVE HOUSINGS adds greatly to rigidity—increases bearing and gear life.

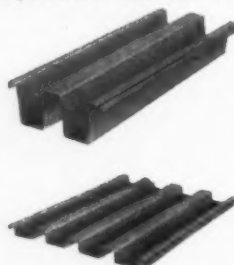
ALL BEARINGS ARE ANTI-FRICTION — no sleeve bearings, even on idler gears.

MICROMETER TYPE DIALS assure a positive setting both on drive and outboard housing.

### ONE OF THE LARGEST MACHINES EVER BUILT ROLLS FLOORING, ROOF DECK . . .



Left: One of three mammoth ARDCOR Roll Forming Machines designed to form steel roof deck and flooring up to 132 ft. per minute. Entire production line 180 ft. long; approximate weight of equipment, 300 tons.

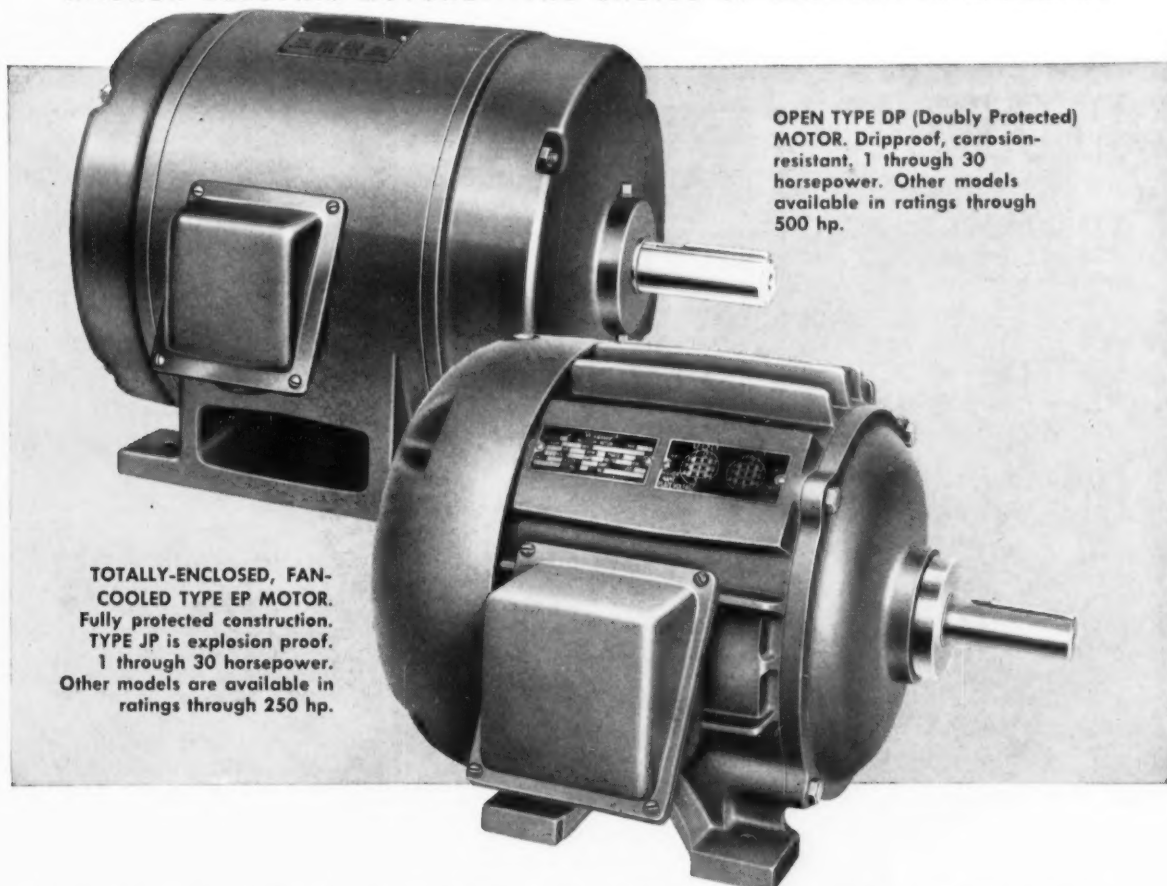


Consult our Engineering Facilities, without obligation . . .



**American ROLLER DIE CORP.**  
29504 Clouton Avenue  
Wickliffe, Ohio

DESIGNERS AND MANUFACTURERS. All sizes and spindle diameters of Roll Forming Machines. Welded and Lock-Beam Tube Mills • Forming Rolls, Tubing and Pipe Mills • Straightening, Flattening and Leveling Mills • Cut-off Machines



**OPEN TYPE DP (Doubly Protected) MOTOR.** Dripproof, corrosion-resistant, 1 through 30 horsepower. Other models available in ratings through 500 hp.

**TOTALLY-ENCLOSED, FAN-COOLED TYPE EP MOTOR.** Fully protected construction. TYPE JP is explosion proof. 1 through 30 horsepower. Other models are available in ratings through 250 hp.

## OPEN TYPE OR TOTALLY ENCLOSED MOTORS... Wagner offers **MORE** for your motor dollar!

- **MORE POWER IN LESS SPACE.** . . These motors are built in NEMA frame sizes 182 through 326 U. They pack more power into less space for easier handling and stocking—require less space for installations.
- **CORROSION-RESISTANT FRAMES** . . . Both types are built with rugged, corrosion-resistant cast iron frames. Motor feet are cast as an integral part of the frame for maximum strength and rigidity.
- **THE TYPE OF PROTECTION YOU NEED** . . . Type DP motors have completely dripproof—virtually splash-proof enclosures; while type EP is totally enclosed, fan-cooled for complete protection; and type JP adds explosion proof features.
- **COOLER OPERATION** . . . Special baffles direct a cooling flow of air through the DP motor. Types EP and JP are fan-cooled and have ribbed frames to increase the surface area for more efficient cooling.
- **LONGER BEARING LIFE** . . . These motors can be re-greased when desired to prolong bearing life. Fresh grease can be added—old grease removed through openings provided in the bearing housing.
- **WAGNER DEPENDABILITY** . . . These two motors have the same high Wagner quality, will give the same long life performance, that have made Wagner Motors a known value for sixty-five years.
- Let a Wagner field engineer, expert on motor applications, show you how these motors can be applied to your needs. Call the nearest of our 32 branch offices, or write us. Bulletins MU-202 and MU-203 give complete information on these Wagner Motors. Write for your file copies today.

M57-A



BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

**Wagner Electric Corporation**  
6403 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

# New Rhodium Plate Won't Curl, Crack or Peel!



# RHODEX

A rhodium plating process that produces \*Compressively Stressed deposits . . . developed specifically for industrial applications. RHODEX will materially increase the fatigue resistance of the metal over which it is deposited.

\*Patent Pending

## SEL REX CORPORATION

*Precious Metals Division*

155 Manchester Place • Newark 4, N.J.  
Please rush descriptive literature and technical data on Sel-Rex RHODEX (Compressively Stressed Rhodium.) 1A-1

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

ZONE \_\_\_\_\_ STATE \_\_\_\_\_

## TRADE GROUPS

Internal Combustion Engine Institute  
201 N. Wells St., Chicago 6, Ill.  
Exec. Secy.: Charles G. Spice

International Acetylene Assn.  
205 E. 42nd St., N. Y. 17, N. Y.  
Secy.: H. F. Reinhard

International Tin Study Group  
7 Carel van Bylandtlaan, The Hague, Netherlands  
Secy.-Gen.: W. Fox

Investment Casting Institute  
27 E. Monroe St.  
Exec. Dr.: H. B. Dolan

Iron & Steel Div., AIME  
29 W. 39th St., New York 18, N. Y.  
Secy.: E. O. Kirkendall

The Lake Superior Iron Ore Assn.  
1400 Hanna Bldg., Cleveland 15, Ohio  
Pres.: Franklin G. Pardee

Lead Industries Assn.  
60 E. 42nd St., N. Y., 17 N. Y.  
Secy.-Treas.: Robert L. Ziegfeld

Machine Knife Assn.  
One Gateway Center, Pittsburgh 22, Pa.  
Secy.: R. K. Hanson

Machinery and Allied Products Institute  
1200 18th St., N. W., Wash. 6, D. C.  
Pres.: C. W. Stewart

Machinery Dealers National Assn.  
1346 Connecticut Ave., Washington 6, D. C.  
Exec. Dir.: R. K. Vinson

Machinery-Metals Export Club  
330 W. 42nd St., New York 36, N. Y.  
Secy.: F. J. Muller

Machinists Vise Assn.  
Reed Mfg. Co., Erie, Pa.  
Secy.: Campbell Wright

Magnesium Assn.  
122 E. 42nd St., New York 17, N. Y.  
Exec. Secy.: Jerry Singleton

Malleable Chain Manufacturers Institute  
11 S. La Salle St., Chicago 3, Ill.  
Exec. Secy.: Mark L. Patterson

Malleable Founders' Society  
1800 Union Commerce Bldg., Cleveland 14, Ohio  
Managing Dir.: Lowell D. Ryan

Manufacturers' Agents, National Assn.  
1724 West Main St., Alhambra, Calif.  
Exec. Secy.: A. X. Schilling

THE IRON AGE



"Idiot, she's a big stockholder!"

QUANTITY  
PRODUCTION  
OF  
GREY IRON  
CASTINGS

ONE OF THE  
NATION'S LARGEST  
AND MOST MODERN  
PRODUCTION  
FOUNDRIES

ESTABLISHED 1866  
**THE WHELAND  
COMPANY**  
CHATTANOOGA 2, TENN.

see



J. H.  
**SESSIONS**  
& SON

new

CATALOGS on  
STAMPINGS &  
stamped  
assemblies,  
ARMED FORCES,  
BOX & CRATE and  
TRUNK HARDWARE.



Write

J. H. SESSIONS & SON  
290 Riverside Ave.,  
Bristol, Conn.



Manufacturers Standardization Society of the Valve and Fittings Industry  
420 Lexington Ave., New York 17, N. Y.  
Exec. Secy.: Lester W. Benoit

Marking Device Assn.  
912 Chicago Ave., Evanston, Ill.  
Secy. & Gen. Mgr.: Elmer F. Way

Material Handling Institute, Inc.  
One Gateway Center, Pittsburgh 22, Pa.  
Secy.: N. F. Young

Metal Cutting Tool Institute  
405 Lexington Ave., New York 17, N. Y.  
Pres.: Perry L. Houser

Metal Lath Manufacturers Assn.  
Engineers Bldg., Cleveland 14, Ohio  
Managing Dir.: Donald R. Wadle

Metal Powder Assn.  
130 W. 42nd St., N. Y. 36, N. Y.  
Exec. Secy.: K. H. Roll

Metal Treating Institute  
271 North Ave., New Rochelle, N. Y.  
Exec. Secy.: C. E. Herington

Mining and Metallurgical Society of America  
11 Broadway, New York 4, N. Y.  
Secy.: Donald M. Liddell

Multiple V-Belt Drive and Mechanical Power Transmission Assn.  
27 East Monroe St., Chicago 3, Ill.  
Exec. Secy.: Harry P. Dolan

National Assn. of Architectural Metal Manufacturers  
228 N. La Salle St., Chicago 1, Ill.  
Exec. Secy.: William N. Wilson

National Assn. of Corrosion Engineers  
1061 M & M Bldg., Houston 2, Texas  
Exec. Secy.: A. B. Campbell

National Assn. of Engineering Companies  
Guardian Bldg., Detroit 26, Mich.  
Exec. Secy.: R. A. Sullivan

Air Moving & Conditioning Assn., Inc.  
2159 Guardian Bldg., Detroit 26, Mich.  
Exec. Vice Pres.: L. O. Monroe

National Assn. of Manufacturers  
Two E. 48th St., N. Y. 17, N. Y.  
Managing Dir.: K. R. Miller

National Assn. of Pipe Nipple Manufacturers, Inc.  
501 Fifth Ave., New York 17, N. Y.  
Exec. Secy.: H. A. Long, Jr.

National Assn. of Purchasing Agents  
11 Park Place, New York 7, N. Y.  
Exec. Secy.: George A. Renard

Scale Manufacturers, Inc.  
1 Thomas Circle, Washington 5, D. C.  
Exec. Secy.: Arthur Sanders

National Assn. of Sheet Metal Distributors  
1900 Arch St., Philadelphia 3, Pa.  
Exec. Secy.: Thomas A. Fernley, Jr.

National Assn. of Waste Material Dealers, Inc.  
271 Madison Ave., New York 16, N. Y.  
Pres.: H. S. Klingenstein

National Electrical Manufacturers Assn.  
155 E. 44th St., New York 17, N. Y.  
Managing Dir.: J. F. Miller

National Foundry Assn.  
53 W. Jackson Blvd., Chicago 4, Ill.  
Exec. Secy.: Charles T. Sheehan

National Machine Tool Builders Assn.  
2071 E. 102nd St., Cleveland 6, Ohio  
Gen. Mgr.: Tell Berna

National Metal Spinners Assn.  
186 Joralemon St., Brooklyn 2, N. Y.  
Secy.: Max M. Goldhaber

National Metal Trades Assn.  
337 W. Madison St., Chicago 6, Ill.  
Commissioner: G. J. Earl

National Openhearth Committee, Iron & Steel Div., AIME  
29 W. 39th St., New York 18, N. Y.  
Secy.: E. O. Kirkendall

National Petroleum Assn.  
Munsey Bldg., Room 958, Washington 4, D. C.  
Gen. Counsel: Fayette B. Dow

## PROBLEM

*to produce low-cost  
prototypes of a new design  
without the high cost  
of permanent tooling*

## SOLUTION

*a single 300-ton Dake  
Hydraulic Die Tryout Press  
with temporary tooling*

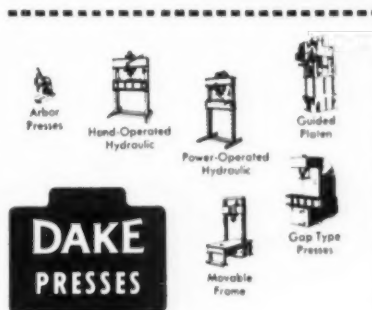
Die tryout is a key operation for most die jobbing shops. This is the test that either proves or rejects a die before it is placed in production. But a lack of adequate press facilities is usually the big drawback. A well-known Chicago diemaker, Cripps Engineering and Tool Co., Inc., has effectively solved the problem of die tryout. Although they had a number of production presses, there was a need for greater die try-

out capacity. Now with a single 300-ton Dake Hydraulic Press, this diemaker is able to test all dies before delivery to the customer. The result: shop down time is held to a minimum and production efficiency runs smoothly without interruption. Specifications for single-acting and double-acting die tryout presses in eighteen electrically operated models are contained in Bulletin 330. Write today for your copy.

DAKE CORPORATION, 602 Seventh St., Grand Haven, Mich.



"Says it makes him feel like a wheel!"



SEND TODAY FOR BULLETIN 330

DAKE CORPORATION  
602 Seventh St., Grand Haven, Mich.

Please send me a copy of Dake Bulletin 330.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**TO GET  
DEPENDABLE  
ACCURATE  
PROMPT  
METAL STAMPING  
SERVICE**

*Call Carlstrom*



**"Old Hands" at  
cold forming in  
all metals.**



Send for latest brochure  
or telephone

**WESTBORO • • 2253  
MASS. 8236**

**CARLSTROM PRESSED METAL CO., INC.**

**WARD  
STEEL  
CO.**

**PROMPT WAREHOUSE  
SERVICE ONLY**

*Most Complete Stock in  
America of*

**BLUE TEMPERED  
SPRING STEEL**

*We believe that the way to sell is to  
carry a stock which permits satisfying  
any reasonable warehouse demand.*

**87B Rindge Ave. Ext. Phone UN 4-2460  
CAMBRIDGE 40, MASS.**

Branch

**3042-3058 W. 51st Street, CHICAGO, ILL.  
Phone: Grovehill 4-2600**

**TRADE GROUPS**

National Screw Machine Products Assn.  
2860 East 130th St., Cleveland 20, Ohio  
Exec. Vice Pres.: Orrin B. Werntz

National Tool & Die Manufacturers Assn.  
907 Public Square Bldg., Cleveland 13, Ohio  
Exec. Secy.: George S. Eaton

National Truck Tank and Trailer Tank Institute  
120 S. LaSalle St., Chicago 3, Ill.  
Exec. Secy.: Allen R. Smith

National Warm Air Heating and Air Conditioning  
Assn.  
145 Public Sq., Cleveland 14, Ohio  
Secy.: George Goodfender

National Welding Supply Assn.  
1900 Arch St., Philadelphia 3, Pa.  
Secy.: Robert C. Fernley

Non-Ferrous Founders' Society  
192 N. Clark St., Chicago 1, Ill.  
Exec. Secy.: James W. Wolfe

Office Equipment Manufacturers Institute  
777 Fourteenth St., N. W., Washington, D. C.  
Administrative Vice-Pres.: E. D. Taylor

Open Steel Flooring Institute, Inc.  
1506 First National Bank Bldg., Pittsburgh 22, Pa.  
Secy.: Stuart J. Swenson

Pipe Fittings Manufacturers Assn.  
60 E. 42nd St., New York 17, N. Y.  
Secy.: J. L. Giacomino

Porcelain Enamel Institute, Inc.  
1145 19th St., N.W., Wash. 6, D. C.  
Pres.: J. W. Vicary

Power Crane and Shovel Assn.  
75 West St., New York 6, N. Y.  
Secy.: Herbert S. Blake, Jr.

Power Transmission Council, Inc.  
320 Broadway, New York 7, N. Y.  
Vice-Pres.: E. R. Rath

Pressed Metal Institute  
3673 Lee Road, Cleveland 20, Ohio  
Managing Dir.: H. A. Daschner

Radio-Electronics-Television Manufacturers Assn.  
Wyatt Bldg., Suite 800  
777 Fourteenth St., N. W., Washington 5, D. C.  
Exec. Vice-Pres.: James D. Secrest

Rail Steel Bar Assn.  
38 S. Dearborn St., Chicago 3, Ill.  
Pres.: O. W. Irwin

Register Manufacturers Assn.  
5 E. Long St., Columbus 15, O.  
Pres.: F. C. Bowers

Resistance Welder Manufacturers Assn.  
1900 Arch St., Philadelphia 3, Pa.  
Exec. Secy.: George A. Fernley

Roll Manufacturers Institute  
1026 Farmers Bank Bldg., Pittsburgh 22, Pa.  
Exec. Secy. & Treas.: M. K. Ulrich

Rolling Mill Machinery and Equipment Assn.  
1026 Farmers Bank Bldg., Pittsburgh 22, Pa.  
Secy.-Treas.: M. K. Ulrich

Scientific Apparatus Makers Assn.  
20 N. Wacker Drive (Rm. 3120), Chicago 6, Ill.  
Exec. Vice-Pres.: Kenneth B. Anderson

Service Tools Institute  
53 Park Place, New York 7, N. Y.  
Secy.: George P. Byrne

Shipbuilders Council of America  
21 West St., New York 6, N. Y.  
Pres.: L. R. Sanford

Society for Non-Destructive Testing  
1109 Hinman St., Evanston, Ill.  
National Secy.: Philip D. Johnson

Society of Automotive Engineers  
29 W. 39th St., New York 18, N. Y.  
Secy.: John A. C. Warner

Society of Plastic Engineers, Inc.  
34 E. Putnam Ave., Greenwich, Conn.  
Exec. Secy.: P. J. Underwood

Socket Screw Products Bureau  
53 Park Pl., New York 7, N. Y.  
Secy.: George P. Byrne

Spring Manufacturers Assn.  
Box 1440, Bristol, Conn.  
Secy.: George E. Underwood

Spring Washer Institute  
75 West St., New York 6, N. Y.  
Secy.: Herbert S. Blake, Jr.

Steel Boiler Institute, Inc.  
1308 Land Title Bldg., Philadelphia 10, Pa.  
Pres.: R. A. Locke

Steel Castings Institute of Canada  
568 Booth St., Ottawa, Canada

Steel Founders' Society of America  
606 Terminal Tower, Cleveland 13, Ohio  
Exec. Vice-Pres.: F. Kermit Donaldson

Steel Joist Institute  
Dupont Circle Bldg., 1346 Connecticut Ave., N.W.  
Washington 6, D. C.  
Managing Dir.: C. H. Luedeman

Steel Kitchen Cabinet Manufacturers Assn.  
1008 Engineers Bldg., Cleveland 14, Ohio  
Exec. Secy.: Arthur J. Tuscany, Jr.

Steel Plate Fabricators Assn.  
79 W. Monroe St., Chicago 3, Ill.  
Exec. Dir.: J. Dwight Evans

Steel Products Warehouse Assn.  
637 Union Commerce Bldg., Cleveland 14, Ohio  
Pres.: Clayton Grandy

Steel Shipping Container Institute, Inc.  
600 Fifth Ave., New York 20, N. Y.  
Pres.: Livingston B. Keplinger

Steel Tank Institute  
120 S. LaSalle St., Chicago 3, Ill.  
Exec. Secy.: Allan R. Smith

Steel Window Institute  
806 Rowland Rd., Cheltenham, Pa.  
Exec. Secy.: George Hingston

Tin Research Institute, Inc.  
492 W. 6th Ave., Columbus 1, Ohio  
Mgr.: R. M. McIntosh

Tri-State Zinc and Lead Ore Producers Assn.  
P. O. Box 879, Miami, Okla.  
Secy.: C. E. Stover

Truck Body and Equipment Assn., Inc.  
1616 K St., N.W., Washington 6, D. C.  
Exec. Mgr.: Arthur H. Nuesse

Truck Trailer Manufacturers Assn.  
1426 "G" St., Room 710, Albee Bldg., Wash. 5,  
D. C.  
Pres.: C. L. Schneider

Tubular and Split Rivet Council  
53 Park Pl., New York 7, N. Y.  
Secy.: George P. Byrne

United States Copper Assn.  
50 Broadway, New York 4, N. Y.  
Secy.: R. R. Eckert

United States Machine Screw Service Bureau  
53 Park Pl., New York 7, N. Y.  
Secy.: George P. Byrne

Uranium Industry Assn.  
553 Washington Bldg., Washington 5, D. C.  
Pres.: Maurice B. Mumford

Utah Mining Assn.  
918 Kearns Bldg., Salt Lake City 1, Utah  
Mgr.: Miles P. Romney

Valve Manufacturers Assn.  
60 E. 42nd St., New York 17, N. Y.  
Secy.: George A. Cooper

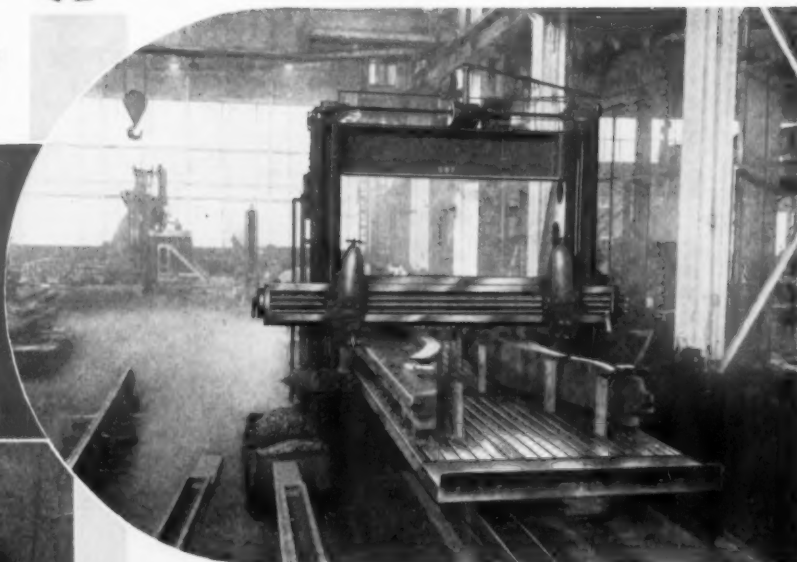
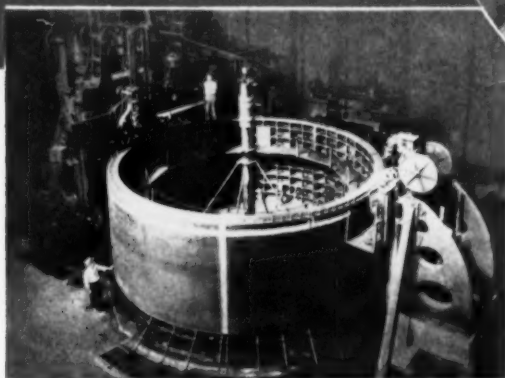
Wire Assn.  
453 Main St., Stamford, Conn.  
Exec. Secy.: Richard E. Brown

Wire Reinforcement Institute  
National Press Bldg., Washington 4, D. C.  
Managing Dir.: Frank B. Brown

# TREADCLOWELL

*Do you need assistance  
in*

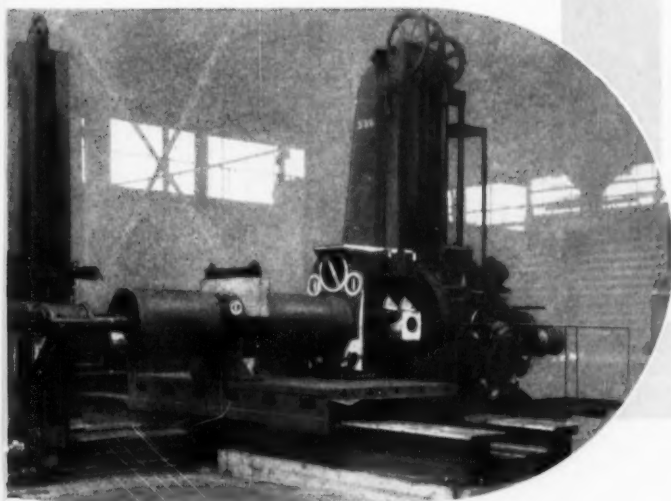
**REMACHINING  
OR  
REBUILDING?**



We have available at our plant in Midland,  
equipment in the following ranges:

BORING MILLS	----- up to 32' swing
PLANERS	----- up to 14' x 12' x 42' stroke
LATHES	----- up to 72"
RADIAL DRILLS	----- up to 10'
PLANNER MILLERS	----- up to 18" x 72"
VERTICAL MILLERS	----- up to 12" x 78"
UNIVERSAL MILLERS	----- up to 15" x 70"
SHAPERS	----- up to 5'
HORIZONTAL BORING MILLS	----- up to 7"
TURRET LATHES	----- up to 6 position
SLOTTERS	----- up to 48"
GEAR CUTTERS	----- up to 72" (Spur)

supplemented by non-destructive test equip-  
ment and stress relieving furnace of the follow-  
ing size; 17'11" x 17'2" x 60" inside.



We would welcome your inquiries for rebuild-  
ing of machinery, job machine work, manu-  
facturing of weldments and/or machining  
and similiar operations.

*We are not limited to rail shipments only. Large,  
heavy equipment can be moved into and out of  
the plant by barge if necessary.*

# TREADCLOWELL

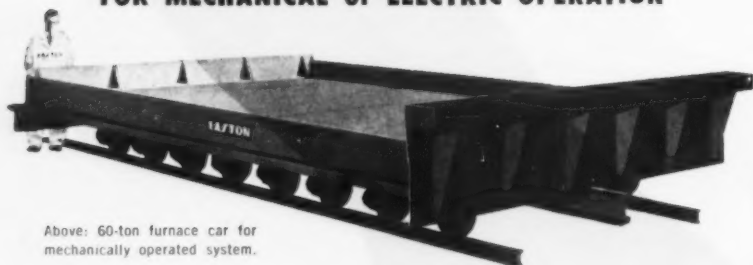
**CONSTRUCTION COMPANY**

**PLANT AND MAIN OFFICE - MIDLAND, PA. (BOX 20)**

**PITTSBURGH NEW YORK CHICAGO**

# Furnace Cars

FOR MECHANICAL or ELECTRIC OPERATION



Above: 60-ton furnace car for mechanically operated system.

**CUSTOM-BUILT** and quality-built for dependable service.

Easton experience includes all types of furnace and transfer cars for modern heat treating systems. Built to any desired capacity.

Write or telephone for technical information.

OUR 42ND YEAR

A-1082

## EASTON®

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.



STYLE AND SIZES FOR ALL MACHINES ON WHICH THREADS ARE CUT

### This die head is unique

**THERE IS NO OTHER LIKE IT**

It cuts threads with insert chasers. These are, in reality, small sections of the business end of large and expensive chasers, but with this important difference: *their cost is so low they can be even thrown away when dull.* For example, for less than \$45 you can get a dozen sets of insert chasers, each set ground ready to go. Change now to insert chaser die heads and watch your performance improve, "UNIFIED AND AMERICAN SCREW THREAD DIGEST" sent free on request.

THE EASTERN MACHINE SCREW CORPORATION

21-41 Barclay St., New Haven, Conn.

## METALWORKING MEETINGS FOR 1957

Technical Meetings, Conventions and Expositions on Various Phases of Metalworking and Metal Production

### FEBRUARY

AMERICAN INSTITUTE OF MINING, METALLURGICAL, AND PETROLEUM ENGINEERS, INC.—Annual meeting, Feb. 24-28, Hotels Jung and Roosevelt, New Orleans. Institute headquarters are at 29 West Thirty-ninth St., New York.

DROP FORGING ASSOCIATION—Winter industry meeting & exposition, Feb. 11-13, Edgewater Beach Hotel, Chicago. Association headquarters are at 419 S. Walnut St., Lansing, Mich.

MALLEABLE FOUNDERS' SOCIETY—Technical & operating conference, Feb. 7-8, Wade Park Manor, Cleveland. Society headquarters are at 1800 Union Commerce Bldg., Cleveland.

### MARCH

AMERICAN SOCIETY FOR METALS—Western metal congress & exposition, Mar. 25-29, Los Angeles. Society headquarters are at 7301 Euclid Ave., Cleveland.

AMERICAN SOCIETY OF TOOL ENGINEERS—Annual meeting, Mar. 23-28, Houston. Society headquarters are at Puritan Ave., Detroit.

ASSOCIATION OF IRON & STEEL ENGINEERS—Western meeting, Mar. 4-5-6, St. Francis Hotel, San Francisco. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS, INC.—44th annual convention, Mar. 10-13, Hotel Conrad Hilton, Chicago. Association headquarters are at 271 Madison Ave., New York.

PRESSED METAL INSTITUTE—Annual spring technical meeting, March 6-7-8, Hotel Carter, Cleveland, Ohio. Institute headquarters are at 3673 Lee Rd., Cleveland.

STEEL FOUNDERS' SOCIETY OF AMERICA—Annual meeting, Mar. 18-19, Drake Hotel, Chicago, Ill. Society headquarters are at 606 Terminal Tower, Cleveland.



Joe Genovese,

"In speaking of my success I must give credit to my wife—I never would have made it without her nagging and insatiable desire for material wealth."



## APRIL

**AMERICAN HOME LAUNDRY MFRS' ASSOCIATION**—Annual meeting, Apr. 14-17, French Lick Springs, Ind. Association headquarters are at 20 N. Wacker Drive, Chicago.

**AMERICAN HOT DIP GALVANIZERS ASSN., INC.**—Annual meeting, Apr. 2-3, The Empress Hotel, Miami Beach, Fla. Association headquarters are at 1806 First National Bank Bldg., Pittsburgh.

**AMERICAN SOCIETY OF LUBRICATION ENGINEERS**—Annual meeting, Apr. 15-16-17, Sheraton-Cadillac Hotel, Detroit. Society headquarters are at 84 E. Randolph St., Chicago.

**AMERICAN WELDING SOCIETY**—Spring Technical & National Meeting & Welding Show, Apr. 8-12, Sheraton & Bellevue-Stratford Hotels, Philadelphia. Society headquarters are at 33 West 39th St., New York.

**ASSOCIATION OF IRON & STEEL ENGINEERS**—Spring conference, Apr. 29-30-May 1, Netherland Plaza Hotel, Cincinnati. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

**COPPER AND BRASS WAREHOUSE ASSOCIATION, INC.**—Meeting, Apr. 24-27, Hollywood Beach Hotel, Hollywood, Fla. Association headquarters are at the Investment Bldg., N.W., Washington.

**GAS APPLIANCE MANUFACTURERS ASSOCIATION**—Annual meeting, Apr. 8-10, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 10 East 14th St., New York, N. Y.

**THE MATERIAL HANDLING INSTITUTE, INC. DIRECTORS' AND MEMBERSHIP MEETINGS**, Apr. 9, Edgewater Beach Hotel, Chicago. Institute headquarters are at One Gateway Center, Pittsburgh.

**METAL POWDER ASSOCIATION**—Thirteenth annual meeting, Apr. 30-May 1, Drake Hotel, Chicago. Association headquarters are at 130 W. 42nd St., New York.

**SCIENTIFIC APPARATUS MAKERS ASSOCIATION**—Annual meeting, Apr. 27-May 2, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 20 North Wacker Drive, Chicago.

## MAY

**AIR-CONDITIONING AND REFRIGERATION INSTITUTE**—Annual meeting, May 6-8, The Homestead, Hot Springs. Institute headquarters are at 1346 Connecticut Ave., N.W., Washington.

**AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.**—National engineering conference (annual), May 27-28, Edgewater Beach Hotel, Chicago. Institute headquarters are at 101 Park Ave., New York.



"Layoff or not, he always seems to make a guaranteed weekly wage!"

January 3, 1957

# ALL-HYDRAULIC!

## SILENT HOIST KRANE KAR

**HYDRAULIC  
Boom Swinging  
Boom Topping  
Boom Telescoping  
Load Hoisting**



**FLUID DRIVE  
POWER STEERING**

Originator and leader in its class for 30 years, **KRANE KAR** goes ALL-HYDRAULIC. Affords amazing ease of handling... touch control of all crane operations... with other engineering advances that simplify operator's work... eliminating gear shifting and clutch replacements... cutting maintenance to the bone and setting new standards of efficiency and productivity. Get the details. Write, wire, telephone today.

MODELS 1000 TO 25,000 LBS. CAP.

## SILENT HOIST & CRANE CO.

Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment  
851 63rd Street, Brooklyn 20, N. Y.

## SILENT HOIST KRANE KAR

**"HAS GIVEN US  
EXCELLENT SERVICE AT  
LOW MAINTENANCE  
COST,"** says

**ATLAS FORGINGS COMPANY  
CICERO, ILL.**

"**KRANE KAR** Unloads freight cars of billets weighing up to 6000 lbs. ... Stacks them in yard ... Transports billets to saw shop ... Loads forgings on trucks for shipment. **KRANE KAR** is easier to use than our old stationary crane, and saves us time. Now we can make full use of our yard for billet inventory." Ask for Bulletin #79.

Another  
**SILENT HOIST "First"**  
—**FLUID DRIVE!**



Ask about our  
**Lease-a-KRANE KAR-Plan**  
... 1 to 3 Year Lease  
with Option to Purchase.

## SILENT HOIST & CRANE CO.

Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment  
851 63rd Street, Brooklyn 20, N. Y.



*save more of it*

with

## STUD WELDING

*... the fastest electric arc welding process for end welding fasteners*

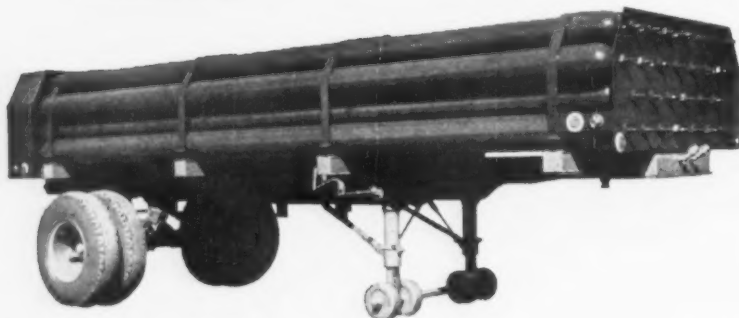
**K S M**

**KSM PRODUCTS, INC.**  
stud welding division  
MERCHANTVILLE 18, N.J.



## with INDEPENDENT Gas Supply TRAILERS

**TRANSPORTING** — Argon — Carbon Dioxide — Helium — Nitrogen — Oxygen — Boron Trifluoride — Hydrogen — Ethylene. Trailer capacities from 187,000 cu. in. to 750,000 cu. in. water capacity. Trailer tubes ICC3A-2400 Specifications with 2400 PSIG Working Pressure.



Sizes and weights to meet all State requirements.

Can be mounted on bases for permanent storage.

**INDEPENDENT ENGINEERING CO., Inc.**



O'FALLON 4, ILLINOIS

**AMERICAN MINING CONGRESS**—Coal convention & exposition, May 13-16, Public Auditorium, Cleveland. Headquarters are at 1200 18th St., Washington.

**COPPER & BRASS RESEARCH ASSOCIATION**—Annual meeting, May 12-15, The Homestead, Hot Springs, Va. Association headquarters are at 420 Lexington Ave., New York.

**THE ELECTROCHEMICAL SOCIETY, INC.**—Annual meeting, May 12-16, Statler Hotel, Washington. Society headquarters are at 216 W. 102nd St., New York.

**INDUSTRIAL HEATING EQUIPMENT ASSOCIATION, INC.**—Spring meeting, May 19-22, The Homestead, Hot Springs, Va. Association headquarters are at 1145 19th St., N.W., Washington.

**INVESTMENT CASTING INSTITUTE**—Meeting, May 1-3, Sheraton-Park Hotel, Washington. Institute headquarters are at 27 East Monroe St., Chicago.

**NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION**—Spring meeting, May 1-2-3, Sheraton Park, Washington. Association headquarters are at 2071 E. 102nd St., Cleveland.

**RADIO - ELECTRONICS - TELEVISION ENGINEERS ASS'N.**—Annual convention, May 15-16-17, Sheraton Hotel, Chicago. Association headquarters are at 777 14th St., N.W., Washington.

**RAIL STEEL BAR ASSOCIATION**—Annual meeting, May 13-14-15, Broadmoor Hotel, Colorado Springs. Association headquarters are at 38 South Dearborn St., Chicago.

### JUNE

**ALLOY CASTING INSTITUTE**—Annual meeting, June 23-25, The Homestead, Hot Springs, Va. Institute headquarters are at 32 3rd Ave., Mineola, N. Y.

**AMERICAN BOILER MANUFACTURERS ASSOCIATION & AFFILIATED INDUSTRIES**—Annual meeting, June 8-12, Skytop, Pa. Association headquarters are at 1571 W. 117th St., Cleveland.

**CONCRETE REINFORCING STEEL INSTITUTE**—Annual meeting, June 24-29, The Greenbrier Hotel, White Sulphur Springs, W. Va. Institute headquarters are at Thirty-eight South Dearborn St., Chicago.

**DROP FORGING ASSOCIATION**—Annual meeting, June 19-22, Grand Hotel, Mackinac Island, Mich. Association headquarters are at 419 S. Walnut St., Lansing, Mich.



"Well, I see it's open season for speeches again!"

**INSTITUTE OF APPLIANCE MFRS.**—25th annual convention-exhibit, June 2-4-5. Institute headquarters are at Shoreham Hotel, Washington.

**THE MAGNESIUM ASSOCIATION**—Annual meeting, June 10-11, The Homestead, Hot Springs, Va. Association headquarters are at 122 E. 42nd St., New York (members only).

**MALLEABLE FOUNDERS' SOCIETY**—Annual meeting, June 13-14, The Broadmoor, Colorado Springs, Colo. Society headquarters are at 1800 Union Commerce Bldg., Cleveland.

**WIRE REINFORCEMENT INSTITUTE, INC.**—Annual spring meeting, June 24-25, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters are at 1049 National Press Bldg., Washington.

#### SEPTEMBER

**ASSOCIATION OF IRON & STEEL ENGINEERS**—Annual convention, Sept. 23-24-25-26, Penn Sheraton Hotel, Pittsburgh. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

**INSTRUMENT SOCIETY OF AMERICA**—12th annual Instrument-Automation Conference & Exhibit, Sept. 9-13, Cleveland Auditorium, Cleveland. Society headquarters are at 313 Sixth Ave., Pittsburgh.

**MARKING DEVICE ASSOCIATION**—National meeting, Sept. 19-20, Roosevelt Hotel, New Orleans. Association headquarters are at 912 Chicago Ave., Evanston, Ill.

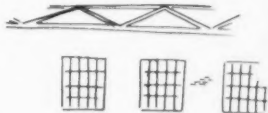
**THE MATERIAL HANDLING INSTITUTE, INC., AND JOINT INDUSTRY FALL MEETING**—Sept. 13-Oct. 1, White Sulphur Springs, West Va., Greenbrier Hotel. Institute headquarters are at One Gateway Center, Pittsburgh.

**NATIONAL PETROLEUM ASSOCIATION**—Annual meeting, Sept. 11-12-13, Traymore Hotel, Atlantic City. Association headquarters are at 958 Munsey Bldg., Washington.

#### OCTOBER

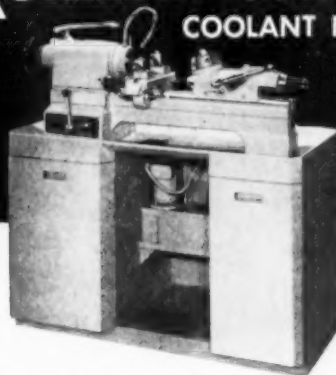
**AMERICAN GAS ASSOCIATION**—Annual convention, Oct. 7-9, Kiel Auditorium, St. Louis. Association headquarters are at 420 Lexington Ave., New York.

**AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.**—35th annual meeting, Oct. 6-11, Hotel del Coronado, Calif. Institute headquarters are at 101 Park Ave., New York.



"Aw come on Harry, you've got to take the boy's kidding in the nasty spirit that it's meant!"

## RUTHMAN GUSHER COOLANT PUMPS



*Illustrated is a Rivett 918 Cabinet Turret Lathe equipped with a Model 1-P3—1/10 H.P. Gusher Coolant Pump*

### The Most For Your Money

Moderate in initial cost, Gusher Coolant Pumps are pre-lubricated . . . require no packing . . . are electronically balanced . . . have no metal-to-metal contact within the impeller housing. Vibration and wear are cut to an absolute minimum. You are sure of a long trouble-free life. To save your money always specify Ruthman Gusher Coolant Pumps. Write for our new catalog.

**THE RUTHMAN MACHINERY CO.**

1809-1823 READING RD.

CINCINNATI 2, OHIO

## Wide or Narrow...



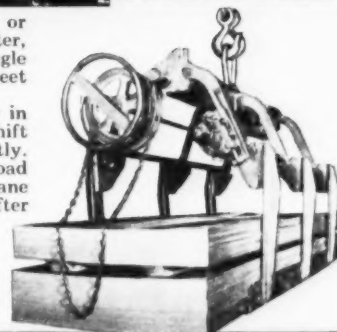
**1 C-F LIFTER HANDLES THEM ALL**

Whether your production requires a few or many widths of sheet steel, 1 C-F Lifter, with its wide range of jaw and carrying angle adjustments will probably meet all your sheet handling requirements.

Adjustments are made by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes almost instantly.

Because it can pick up, carry and unload more loads per hour, using less man and crane time than any other method, a C-F Lifter will soon pay for itself.

Bulletin SL-25 gives you the complete story of C-F Lifter advantages to you. Ask for it today. There's no obligation.



**CULLEN-FRIESTEDT CO.**

1303 South Kilbourn Avenue • Chicago 23, Illinois

you'll save  
on blast cleaning costs



Malleabrasive reduces overall cleaning costs as much as 50% because—

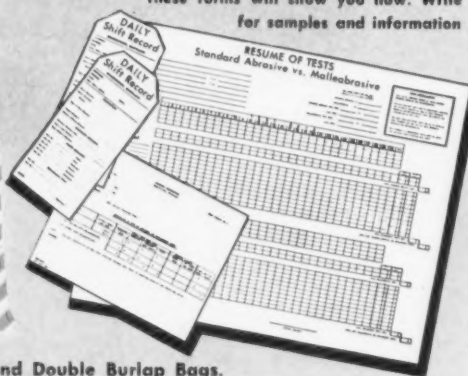
- It wears 2 to 4 times longer than ordinary shot and grit.
- It increases output of cleaned castings.
- It reduces wear on machine parts and cuts machine down time.

These are not just claims. You can prove these savings right in your own plant, in your own machines. We supply all the necessary forms and instructions.

Malleabrasive has reduced costs in more than 800 plants. Why not yours?

make your own 30 day test...

These forms will show you how. Write for samples and information



In easy to handle 50-pound Double Burlap Bags.

# MALLEABRASIVE

THE GLOBE STEEL ABRASIVE CO., MANSFIELD, OHIO ®

Sold by Pangborn Corporation, Hagerstown, Md., and by leading distributors of foundry supplies from coast to coast.

## MEETINGS

CONVEYOR EQUIPMENT MANUFACTURERS ASSOCIATION—Annual meeting, Oct. 12-15, The Grand Hotel, Point Clear, Alabama. Association headquarters are at one Thomas Circle, Washington.

FOUNDRY EQUIPMENT MFRS. ASSOCIATION, INC.—Annual meeting, Oct. 17-18-19, The Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at One Thomas Circle, Washington.

GRAY IRON FOUNDERS' SOCIETY, INC.—Annual meeting, Oct. 9-10-11, The Drake Hotel, Chicago. Society headquarters are at 939 National City-E. 6th Bldg., Cleveland.

THE MAGNESIUM ASSOCIATION—Annual convention, Oct. 17-18, The Biltmore, New York City. Association headquarters are at 122 E. 42nd St., New York (open).

NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION—Annual meeting, Oct. 22-23-24-25, Sheraton French Lick Springs, Ind. Association headquarters are at 2071 E. 102nd St., Cleveland.

NATIONAL TOOL & DIE MFRS. ASSOCIATION—Annual convention, Oct. 31-Nov. 3, Edgewater Beach Hotel, Chicago. Association headquarters are at 907 Public Square Bldg., Cleveland.

PRESSED METAL INSTITUTE—Annual meeting, Oct. 13 thru 17, Castle Harbor, Bermuda. Institute headquarters are at 3673 Lee Rd., Cleveland.

WIRE ASSOCIATION—Annual convention, Oct. 14-17, La Salle Hotel, Chicago. Association headquarters are at 453 Main St., Stamford.

## NOVEMBER

AMERICAN HOME LAUNDRY MFRS' ASSOCIATION—11th National Home Laundry Conference (annual), Nov. 7-8, Hotel Commodore, N. Y. Association headquarters are at 20 N. Wacker Drive, Chicago.

AMERICAN SOCIETY FOR METALS—National metal congress & exposition and 2nd world metallurgical congress, Nov. 2-8, Chicago. Society headquarters are at 7301 Euclid Ave., Cleveland.

GRINDING WHEEL INSTITUTE—Fall semi-annual, Nov. 6-7-8, The Sheraton-Blackstone Hotel, Chicago. Institute headquarters are at 2130 Keith Bldg., Cleveland.

INSTITUTE OF METALS DIV., AIME—Fall meeting, Nov. 4-6, Morrison Hotel, Chicago. Institute headquarters are at 29 W. 39th St., New York.

METAL TREATING INSTITUTE—Annual meeting, Nov. 1-2-3, Sheraton Hotel, Chicago. Institute headquarters are at 271 N. Ave., New Rochelle, N. Y.

NATIONAL ASSOCIATION OF WASTE MATERIAL DEALERS, INC.—National fall meeting, Nov. 8-15, Hotel Ambassador, Los Angeles. Association headquarters are at 271 Madison Ave., New York.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION—Annual meeting, Nov. 11-15, Traymore Hotel, Atlantic City. Association headquarters are at 155 E. 44th St., New York.

NATIONAL FOUNDRY ASSOCIATION—59th annual meeting, Nov. 7-8, Waldorf-Astoria Hotel, New York. Association headquarters are at 53 West Jackson Boulevard, Chicago.

STEEL FOUNDERS' SOCIETY OF AMERICA—T & O conference, Nov. 11-12-13, Carter Hotel, Cleveland, Ohio. Society headquarters are at 606 Terminal Tower, Cleveland.

## DECEMBER

ELECTRIC FURNACE STEEL COMMITTEE, Iron & Steel Div., AIME—Annual meeting, Dec. 4-6, Penn-Sheraton Hotel, Pittsburgh, Pa. Committee headquarters are at 29 W. 39th St., New York.

THE MATERIAL HANDLING INSTITUTE, INC.—Annual meeting, Dec. 10-11, Biltmore Hotel, New York City. Institute headquarters are at One Gateway Center, Pittsburgh.

NATIONAL ASSOCIATION OF MANUFACTURERS—Annual meeting, Dec. 5-6-7, Waldorf-Astoria, N. Y. Association headquarters are at 2 E. 48th St., New York.





**PECOR**

**a leading name  
in steel plant  
equipment for over  
75 years**

This long record of superior service, and traditionally fine craftsmanship can be of real value if you are planning new operations or the expansion of existing facilities. Technical experience that has grown with the industries we serve, coupled with skilled workmen, will provide you with the greatest return on your investment dollar. If you have an engineering or special machinery problem, why not give PECOR a call?



This 40-page catalog tells the Pecor story in detail. Write for your free copy.



**PENNSYLVANIA  
ENGINEERING CORPORATION**  
NEW CASTLE, PA.

**ENGINEERS • FABRICATORS**

Blast Furnaces • Scrap Cars  
Open Hearth Furnaces • Slag Cars  
Oxygen Converters • Hot Metal Mixers  
Ore Transfer Cars • Ladles • Jack Cars  
Ladle Transfer Cars • Ingot Cars  
Mixer Cars • Thermo Metal (Bottle) Cars

## SECURITY ENGINEERING DIVISION

DRESSER OPERATIONS, INC.

P.O. Box 30

Whittier, California

Mr. Arthur Van Wyke  
The Iso-Mite Corp.  
4470 E. Washington Blvd.  
Los Angeles, Calif.

July 19, 1956

Subj: Conference yesterday between Stan Hodge, Allen R. Eakin, Arthur Van Wyke and myself regarding release of an article to The Iron Age.

Security Engineering at Whittier has found two major uses for Iso-Mite materials as an aid to increased production and decreased maintenance costs: (1) in extreme pressure areas; and (2) in hydraulic systems.

### USE OF ISO-MITE IN EXTREME PRESSURE AREAS

Since the appearance of The Iron Age article August 11, 1955, we have gained a great deal of experience in the use of Iso-Mite in such extreme pressure areas as slide ways, feed screws and sleeve bearings. Despite the fact that we are now operating three shifts a day as compared to two shifts at the time the original article was written, we have found that our down time in these areas has been reduced by 50%. We also estimate that our cost of replacement parts has decreased 25%. We have replaced no major parts due to lubrication failure in gear boxes where Iso-Mite was used, and have had no apparent excessive wear.

Our best example of the effective use of Iso-Mite in extreme pressure area is on our 1933-36" Bullard Vertical Turret Lathe. This machine was mentioned in the second and third paragraphs of The Iron Age article. We have used Iso-Mite on this machine now for approximately two years. Prior to the application of Iso-Mite the machine would start spasmodically and under terrific drags, and after the clutch was disengaged it would stop instantly. The origin of the trouble on this machine was an oil pump failure. It had been operated over a period of time without the oil pump running. The machine has a turntable which rests on a tapered cast iron bearing, and because it had been operated without lubrication, this bearing was badly galled. The machine has a 36" face plate mounted vertically and carries an operational load of between 800 and 1,000 lbs. Because of the difficulties we had in operating the machine it had been considered scrap or, at best, due for major overhaul.

Within a few hours after the application of Iso-Mite, the clutch engaged smoothly, with equally smooth starts and stops. The machine has operated at a high level of efficiency during the two years Iso-Mite has been used. Last week, for the first time during this two year period, adjustments were made on the turntable spindle. The increased production and reduced maintenance costs brought about by the use of Iso-Mite on this machine are significant. Before using Iso-Mite, we lost one hour out of every four due to maintenance down time. Since the use of Iso-Mite our maintenance down time is practically non-existent. Our savings in direct labor have amounted to 10 hours per week per shift. Since this machine is operating on a two shift basis, we estimate that we have saved \$2,500 over the past year in direct labor costs alone. Our total savings, taking into account gains in production, lower repair and maintenance costs, and other indirect factors could easily amount to considerably more than this \$2,500 figure.

### USE OF ISO-MITE IN HYDRAULIC SYSTEMS

We have also found Iso-Mite to be very effective in the hydraulic systems of our machines. A very good example is our Ingersoll 5-Spindle Special Rock Bit Milling Machine. This machine is now seven years old and is equipped with Vickers hydraulic controls and valves. Before using Iso-Mite, approximately eighteen months ago, the valves had deteriorated to the extent that the machine would fail at times to cycle. The machine was down a substantial part of the time for maintenance and was disrupting production schedules. Lost time, due to maintenance, was one shift (or eight hours) a week. Since the application of Iso-Mite to the hydraulic system, down time due to maintenance has decreased to less than one shift (eight hours) per month. In other words, Iso-Mite reduced Maintenance down time over 75% on this machine. We now can count on the Ingersoll to handle approximately 1/3 of our total milling production.

We effected similar results by using Iso-Mite in our hydraulically operated Cincinnati Single Spindle Rock Bit Milling Machines. In the improvement of their operation and reduction of maintenance down time, our savings due to use of Iso-Mite have been comparable to our experience on the Ingersoll mentioned above.

Based on our experience in using Iso-Mite over a two year period, we recommend it highly for use on any type of equipment that moves, especially in hydraulic systems and areas where there is extreme pressure.

HT:ew

Read and approved:

(s) Stan Hodge

(s) Al Eakin

(s) HUGH TROTTER

Production Manager

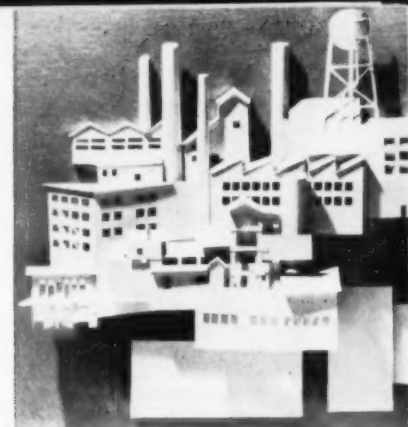
For address of our nearest distributor write

## ISO MITE AUTOMOTIVE PROCESSES, INC.

4470 E. Washington Boulevard

Angelus 9-0348

Los Angeles 23, California



Steel	P. 336
Nonferrous	P. 343
Pig Iron, Ore	P. 346
Ferroalloys	P. 349
Scrap	P. 350

# Price and Production Data 1957

## Index To This Section:

<b>CANADIAN IRON &amp; STEEL</b>	
Ferroalloy Production	346
Pig Iron Production	346
Steel Capacity	337
Steel Production	337

<b>FINANCIAL ANALYSIS, STEEL</b>	
.....	339-340

<b>FERROALLOYS</b>	
Ferromanganese	349
Ferrosilicon	349
Spiegeleisen	349

<b>METAL POWDERS</b>	
Copper Powder Prices, Shipments	345
Iron Powder Shipments, Imports	345
Iron Powder Avg. Monthly Prices	345
Zinc Powder Prices	345

<b>NONFERROUS PRICES</b>	
Aluminum Scrap, Cast	343
Antimony, Monthly	344
Brass Ingots, 85-5-5-5	343
Brass Scrap, No. 1 Comp.	343
Bronze Ingots, 88-10-2	343
Cadmium, Sticks, Bars	343
Cobalt, 97 to 99 Pct	343
Copper, Electrolytic	344
Lead	345
Magnesium, 99.8 Pct Plus	344

Nickel, Electrolytic	344
No. 1 Heavy Copper Scrap	343
Prime Western Zinc	345
Remelt Aluminum Ingot	343
Straits Tin	344

<b>ORE, IRON</b>	
Analyses	348
Consumption	348
Prices	348
Shipments	348

<b>PIG IRON PRICES</b>	
Birmingham Foundry	347
Buffalo Foundry	347
Chicago Foundry	347
Composite, Price	346
Foundry Coke	344
Furnace Coke	344
Granite City, Ill., Foundry	347
Valley Basic	347
Valley Foundry	347
Valley Malleable	347

<b>PRODUCTION</b>	
Aluminum	344
Magnesium	345
Pig Iron	346
Steel Capacity, Production	337
Steel Ingots, Monthly	338
Steel Operating Rates	336
World Steel	338

<b>REFRACTORIES</b>	
Chrome Brick	349
Fire Clay Brick	349
Magnesite Brick	349
Silica Brick	349

<b>SCRAP, IRON, STEEL</b>	
Composite Price	350
Cupola Cast at Cincinnati	350
Chicago Heavy Melting	350
Machinery Cast at Chicago	350
Philadelphia Heavy Melting	350
Pittsburgh Heavy Melting	350

<b>STEEL PRICES</b>	
Buttweld Steel Pipe	342
Cast Iron Water Pipe	342
Cold-Finished Steel Bars	342
Cold-Rolled Sheets	341
Cold-Rolled Strip	341
Composite, Steel	336
Galvanized Sheets	341
High Speed Tool Steel	341
Hot-Rolled Sheets	341
Hot-Rolled Strip	341
Manufacturer's Bright Wire	342
Merchant Bars	342
Plates at Pittsburgh	341
Stainless Steel Sheets	342
Steel Rails	342
Structural Steel Shapes	342
Tinplate at Pittsburgh	341

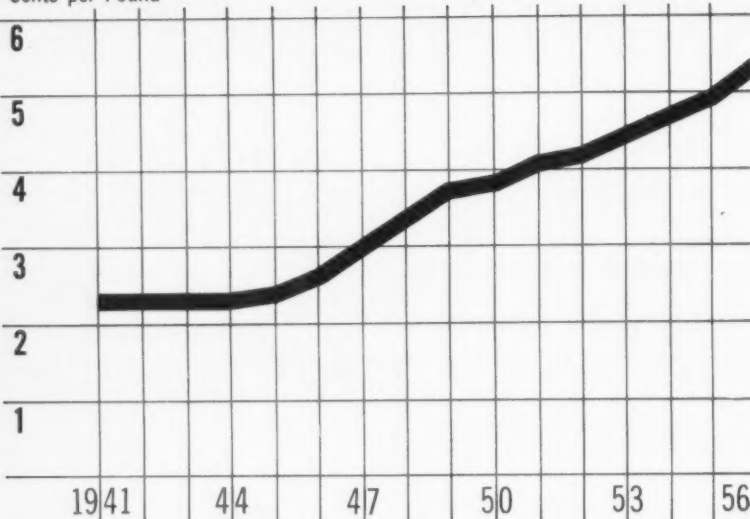


# Steel Prices Production

## FINISHED STEEL BASE PRICES

Cents per Pound

The Iron Age Composite



## THE IRON AGE FINISHED STEEL COMPOSITE PRICE

Current Series, 1931 to 1955, Cents Per Pound

	1933	1934	1935	1936	1937	1938	1939	1940*	1945*	1946
Jan.	1.830	1.958	2.065	2.076	2.323	2.584	2.354	2.305	2.412	2.464
Feb.	1.812	1.958	2.065	2.065	2.323	2.581	2.354	2.305	2.427	2.555
Mar.	1.808	1.958	2.065	2.055	2.323	2.578	2.354	2.305	2.432	2.719
Apr.	1.790	2.007	2.065	2.062	2.584	2.578	2.354	2.267	2.433	2.719
May	1.770	2.154	2.065	2.062	2.584	2.569	2.308	2.305	2.436	2.719
June	1.766	2.154	2.065	2.067	2.584	2.513	2.283	2.305	2.464	2.719
July	1.841	2.107	2.065	2.139	2.584	2.359	2.283	2.305	2.464	2.719
Aug.	1.851	2.065	2.065	2.139	2.584	2.359	2.283	2.305	2.464	2.719
Sept.	1.879	2.065	2.065	1.146	2.584	2.357	2.283	2.305	2.464	2.719
Oct.	1.955	2.065	2.076	2.172	2.584	2.320	2.283	2.305	2.464	2.719
Nov.	1.947	2.065	2.076	2.172	2.584	2.354	2.288	2.305	2.464	2.719
Dec.	1.958	2.065	2.076	2.283	2.584	2.354	2.305	2.305	2.464	2.747
Average	1.851	2.051	2.068	2.118	2.536	2.459	2.311	2.302	2.449	2.686

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Jan.	2.877	3.193	3.720	3.637	4.131	4.131	4.376	4.634	4.797	5.174
Feb.	2.884	3.215	3.719	3.637	4.131	4.131	4.376	4.634	4.797	5.174
Mar.	2.884	3.241	3.715	3.637	4.131	4.131	4.376	4.634	4.797	5.179
Apr.	2.884	3.241	3.709	3.637	4.131	4.131	4.376	4.634	4.797	5.179
May	2.884	3.214	3.706	3.637	4.131	4.131	4.393	4.634	4.797	5.179
June	2.884	3.211	3.705	3.637	4.131	4.131	4.517	4.634	4.797	5.179
July	2.914	3.293	3.705	3.637	4.131	4.180	4.634	4.789	5.081	5.179
Aug.	3.193	3.720	3.705	3.637	4.131	4.376	4.634	4.801	5.174	5.560
Sept.	3.193	3.720	3.705	3.637	4.131	4.376	4.634	4.801	5.174	5.622
Oct.	3.193	3.720	3.705	3.637	4.131	4.376	4.634	4.798	5.174	5.622
Nov.	3.193	3.720	3.705	3.637	4.131	4.376	4.633	4.797	5.174	5.622
Dec.	3.193	3.720	3.756	4.131	4.131	4.376	4.633	4.797	5.174	5.622
Average	3.014	3.434	3.713	3.662	4.131	4.237	4.518	4.716	4.977	5.358

\* 1941-1944 inclusive: 2.396.

THE IRON AGE finished steel composite price is a weighted average of the base prices of 10 major steel products which account for the majority of finished steel shipments. It is weighted by the percentage that each of these products is to total finished steel shipments during the base period. With the base constant, the only changes in the composite from 1929 through 1940 or from 1941 through 1949 occur when one or more steel products prices were changed.

In the composite shown here there are two base periods. For the years 1931 through 1940 the base is finished steel shipments for 1929-1939 inclusive. For 1941 through 1950 the base is finished steel shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. Two base periods are used because of basic changes in the shipment pattern in the 20 years covered. In each case the products remain the same. They are hot-rolled bars, structural shapes, plates, rails, pipe, wire and hot- and cold-rolled sheets and strip. To eliminate variations due to nonferrous metals price fluctuations, no coated products are included.

Details of latest revisions which appear in current series may be found in The Iron Age, May 12, 1949, p. 139. This reference also gives a comparison of current series with former series.

## STEEL INDUSTRY OPERATING RATES

U. S. Openhearth, Bessemer and Electric Furnace Ingots and Steel for Castings—Percent of Capacity

	1938	1939	1940	1941	1942	1943		1944	1945	1946	1947	1948	1949		1950	1951	1952	1953	1954	1955	1956
Jan.	29.14	52.69	83.40	96.90	94.50	96.80	Jan.	95.70	88.89	49.63	93.20	93.60	100.4	Jan.	94.0	99.9	99.3	99.1	75.3	82.7	99.2
Feb.	31.59	54.93	70.00	96.60	95.90	98.50	Feb.	97.00	90.80	19.80	91.90	93.00	101.6	Feb.	89.2	97.2	100.7	99.1	74.3	88.0	99.2
Mar.	33.67	56.52	63.50	99.70	98.20	100.00	Mar.	96.80	95.00	83.30	94.40	95.30	102.9	Mar.	88.8	102.5	102.2	101.8	89.0	93.4	100.2
Apr.	33.70	50.97	61.20	97.60	97.70	99.30	Apr.	96.80	92.80	77.55	93.90	80.40	98.6	Apr.	100.6	103.1	89.7	96.7	88.1	94.8	99.7
May	30.26	48.31	71.80	98.70	98.10	98.40	May	97.10	91.80	92.20	94.70	94.63	93.9	May	101.4	102.8	89.2	100.1	70.7	98.6	96.2
June	23.33	53.57	84.50	99.20	96.30	94.80	June	94.10	87.10	74.43	92.90	93.87	82.2	June	99.6	101.0	18.4	97.2	72.0	94.1	92.1
July	33.25	52.60	83.00	93.40	94.50	96.20	July	94.30	86.30	84.90	85.10	88.70	71.0	July	94.8	96.3	17.7	93.1	62.9	85.3	14.9
Aug.	42.63	62.45	89.50	95.70	95.40	98.30	Aug.	94.10	70.70	86.90	92.20	93.10	82.3	Aug.	96.5	98.7	92.4	94.2	63.1	89.7	74.5
Sept.	46.03	72.68	90.60	96.40	96.40	100.70	Sept.	94.00	76.30	86.93	93.80	96.10	83.6	Sept.	99.4	101.2	101.9	92.1	66.7	95.7	98.8
Oct.	52.19	89.52	98.10	99.00	100.00	101.20	Oct.	95.60	69.00	89.00	97.70	99.90	11.4	Oct.	102.4	103.0	106.6	94.7	72.9	96.2	101.3
Nov.	61.74	83.46	96.00	98.30	97.80	98.80	Nov.	94.39	76.90	85.40	96.50	100.50	53.4	Nov.	97.0	102.6	105.9	89.9	79.1	98.0	100.1*
Dec.	82.72	85.91	94.10	98.10	96.60	94.20	Dec.	92.80	74.80	73.90	95.43	97.70	94.8	Dec.	98.0	100.6	105.6	79.7	78.6	98.5	100.0*
Average	39.63	64.53	82.10	97.40	96.80	98.10	Average	95.50	83.50	72.50	93.00	94.10	81.1	Average	96.9	100.9	85.8	94.9	71.0	93.0	89.69†

† Preliminary.

Source: American Iron and Steel Institute.



# STEEL INDUSTRY

Openhearth, bessemer and electric furnace steel capacity, production and operating rates . . . Canadian output, capacity.

## COMPOSITE PRICE BY PERIODS

Period	Cents per Pound
Dec. 31, 1946 to Jan. 6, 1947	2.848
Jan. 7, 1947 to July 28, 1947	2.884
July 29, 1947 to Feb. 16, 1948	3.193
Feb. 17, 1948 to May 3, 1948	3.241
May 4, 1948 to July 26, 1948	3.211
July 27, 1948 to Aug. 2, 1948	3.721
Aug. 3, 1948 to Feb. 14, 1949	3.720
Feb. 15, 1949 to Mar. 14, 1949	3.717
Mar. 15, 1949 to Mar. 28, 1949	3.714
Mar. 29, 1949 to Apr. 11, 1949	3.711
Apr. 12, 1949 to May 2, 1949	3.708
May 3, 1949 to Dec. 21, 1949	3.705
Dec. 22, 1949 to Dec. 26, 1949	3.836
Dec. 29, 1949 to Dec. 4, 1950	3.837
Dec. 5, 1950 to July 25, 1952	4.131
July 26, 1952 to May 8, 1953	4.376
May 9, 1953 to May 21, 1953	4.390
May 22, 1953 to June 16, 1953	4.417
June 17, 1953 to Nov. 14, 1953	4.634
Nov. 15, 1953 to Dec. 15, 1953	4.632
Dec. 16, 1953 to June 30, 1954	4.634
July 1, 1954 to July 2, 1954	4.635
July 3, 1954 to July 5, 1954	4.791
July 6, 1954 to Oct. 3, 1954	4.801
Oct. 4, 1954 to Nov. 9, 1954	4.798
Nov. 10, 1954 to Nov. 11, 1955	4.797
July 12 to July 18, 1955	5.178
July 19 to July 25, 1955	5.176
July 26, 1955 to March 19, 1956	5.174
March 20, 1956 to Aug. 6, 1956	5.179
Aug. 7, 1956 to Aug. 13, 1956	5.374
Aug. 14, 1956 to Dec. 31, 1956	5.622

## CANADIAN STEEL OUTPUT

Ingots and Steel for Castings, Net Tons	Total Steel Ingots and Castings		
	Ingots	Castings	Total
1930	1,072,321	60,830	1,133,151
1931	744,605	41,501	786,106
1932	349,843	25,864	375,707
1933	441,346	17,830	459,176
1934	827,041	23,116	850,157
1935	1,016,814	35,123	1,051,937
1936	1,211,334	38,337	1,249,671
1937	1,496,575	74,652	1,571,227
1938	1,238,078	56,636	1,294,714
1939	1,266,056	60,967	1,327,023
1940	2,177,973	77,899	2,255,872
1941	2,578,063	123,250	2,701,313
1942	2,942,921	178,440	3,121,361
1943	2,848,235	148,743	2,996,978
1944	2,878,407	146,003	3,024,410
1945	2,747,206	134,117	2,881,323
1946	2,253,437	81,211	2,334,648
1947	2,854,532	96,634	2,951,166
1948	3,089,027	112,629	3,201,656
1949	3,089,368	97,562	3,186,930
1950	3,298,068	86,063	3,384,131
1951	3,446,125	121,236	3,567,361
1952	3,578,106	122,037	3,700,143
1953	3,009,813	105,656	3,115,469
1954	3,113,862	80,300	3,194,162
1955	4,441,743	87,658	4,529,401
1956*	5,172,000	118,800	5,290,800

\* Estimated.

## CANADIAN STEEL CAPACITY

Ingots and Steel for Castings, Net Tons	Steel Ingot Capacity	Steel Ingot Output	Percent of Capacity
1930	2,346,000	1,266,056	53.9
1939	2,867,000	2,177,973	81.6
1941	2,964,000	2,578,063	86.9
1942	3,172,000	2,942,921	92.7
1943	3,257,500	2,848,235	87.4
1944	3,338,200	2,878,407	86.2
1945	3,356,600	2,747,206	81.7
1946	3,356,600	2,253,437	67.0
1947	3,245,000	2,854,532	87.9
1948	3,490,000	3,089,027	88.5
1949	3,598,000	3,089,368	84.1
1950	3,672,500	3,298,068	89.8
1951	3,630,900	3,446,125	94.9
1952	3,630,900	3,578,106	98.5
1953	4,302,800	3,009,813	69.9
1954	4,657,500	3,113,862	66.8
1955	4,883,000	4,441,743	90.9
1956*	5,192,000	5,172,000	99.6

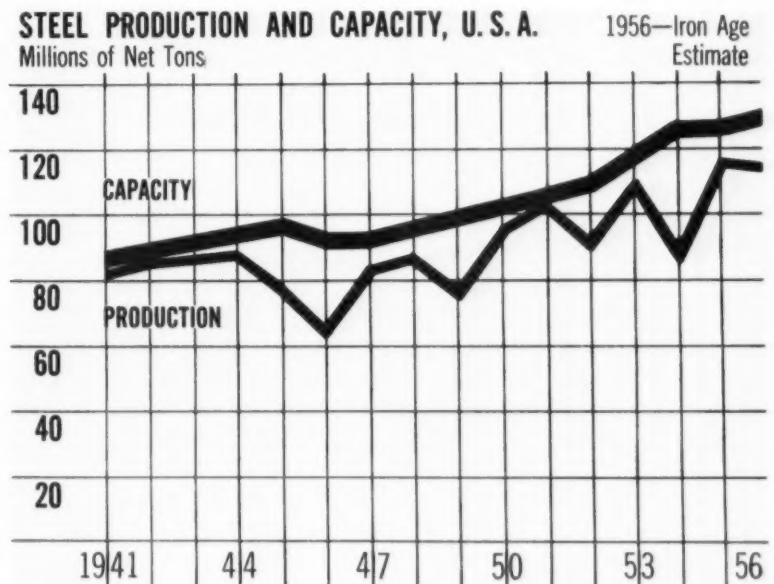
\* Estimated.

## STEEL CAPACITY, PRODUCTION AND RATES

Ingots and Steel for Castings, Net Tons

	Openhearth			Bessemer		Electric*		Total	
	Total Capacity	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output
1956†	128,363,090	104,030,000	80.0	3,000,000	3.0	8,000,000	7.0	115,030,000	100.00
1955	125,828,310	105,359,417	84.0	3,319,517	2.8	8,357,151	7.2	117,036,085	93.0
1954	124,330,410	100,327,494	81.0	2,548,104	2.9	5,436,084	6.1	108,311,682	71.0
1953	117,547,470	100,473,823	85.0	3,855,705	3.5	7,280,191	6.5	111,609,719	84.9
1952	108,587,670	82,846,439	88.9	3,523,677	3.8	6,797,923	7.3	93,168,039	85.8
1951	104,229,650	83,166,518	88.6	4,880,946	4.6	7,142,384	6.8	105,199,848	100.9
1950	96,120,930	70,248,833	90.1	3,946,856	5.1	3,782,717	4.8	77,978,178	81.1
1949	94,243,460	79,340,157	89.5	4,243,172	4.8	5,057,141	5.7	88,640,470	94.1
1948	91,241,250	76,873,793	90.5	4,232,543	5.0	3,787,785	4.5	84,894,071	93.0
1947	91,890,560	60,711,963	91.2	3,327,737	5.0	2,563,024	3.8	66,602,724	72.5
1946	95,505,280	71,939,602	90.3	4,305,318	5.4	3,456,728	4.3	79,701,648	83.6
1945									
1944	83,654,420	80,363,953	89.7	5,039,923	5.6	4,237,724	4.7	89,641,600	95.5
1943	90,589,190	78,621,804	86.8	5,625,492	6.3	4,589,216	5.2	88,836,512	98.1
1942	88,886,530	76,501,957	86.0	6,553,424	6.5	3,976,550	4.6	86,031,931	96.8
1941	85,158,150	74,389,619	89.8	5,578,071	6.7	2,871,569	3.5	82,839,258	97.3
1940	81,619,496	61,573,083	91.9	3,708,573	5.6	1,701,030	2.5	66,982,686	82.1
1939	81,828,958	48,409,800	91.7	3,359,916	6.4	1,029,998	1.9	52,799,714	64.5
1938	80,158,638	29,080,016	91.6	2,106,340	6.6	865,634	1.8	31,751,990	39.6
1937	78,148,374	51,824,979	91.5	3,863,916	6.8	940,048	1.7	56,836,945	72.6
1936	78,164,300	48,760,463	91.2	3,873,472	7.2	866,064	1.6	53,499,999	68.4
1935	78,451,930	34,401,280	90.1	3,175,235	8.3	607,190	1.6	38,183,708	48.7
1934	78,126,416	26,354,636	90.3	2,421,843	8.3	405,248	1.4	29,181,924	37.4
1933	78,614,403	22,827,473	87.7	2,720,246	10.5	472,510	1.8	26,020,229	33.1
1932	78,780,913	13,336,210	87.0	1,715,925	11.2	270,766	1.6	15,322,901	19.6
1931	77,257,803	25,210,714	86.8	3,386,259	11.6	461,988	1.6	29,058,961	37.6
1930	72,985,406	39,255,073	86.1	5,639,714	12.4	688,634	1.5	45,583,421	62.5
1929	71,438,516	54,155,235	85.7	7,977,210	12.6	1,073,045	1.7	63,205,490	88.6
1928	68,840,912	49,407,631	85.6	7,414,618	12.8	907,232	1.6	57,729,481	83.9
1927	67,236,117	42,638,535	84.7	6,934,734	13.8	756,138	1.5	50,327,407	74.9

\* Includes very small tonnages of crucible steel.  
† Jan. 1, 1950 to June 30, 1950 capacity was 99,392,800 net tons. Beginning July 1, 1950 capacity was revised to 100,563,000 net tons.  
Source: American Iron & Steel Institute



# STEEL INDUSTRY

Monthly data on U.S. production of openhearth, bessemer and electric furnace ingots . . . Round-up of world steel output.

## WORLD STEEL PRODUCTION

Ingots and Steel for Castings, Thousands of Net Tons

Compiled by THE IRON AGE from the United Nations Bulletin of Statistics, Chambre Syndicate de la Siderurgie Francaise, British Iron and Steel Federation and the American Iron and Steel Institute.

Country	1956*	1955 <sup>1</sup>	1954	1953 <sup>1</sup>	1952	1951	1950	1949	1948	1947	1946	1945
Australia	2,600	2,460	2,117	2,296	1,835	1,606	1,596	1,309	1,425	1,373	1,164	1,505
Austria	2,250	2,009	1,822	1,427	1,165	1,133	1,044	920	713	394	207	189
Belgium	7,000	6,403	5,522	4,997	5,621	5,590	4,155	4,242	4,318	3,181	2,508	805
Brazil	1,400	1,286	1,288	1,109	985	930	834	677	545	426	379	227
Canada	5,450	4,529	3,192	4,110	3,703	3,567	3,384	3,186	3,159	2,902	2,293	2,803
China	4,000	3,142	2,397	1,150								
Czechoslovakia	5,700	5,401	4,884	4,883	3,944	3,651	3,190	2,756	2,910	2,520	1,843	1,045
France	14,800	13,080	11,319	11,023	11,979	10,842	9,537	10,086	7,984	6,338	4,859	1,822
Germany	26,000	23,516	19,221	16,997	17,423	14,888	13,361 <sup>2</sup>	10,090 <sup>2</sup>	6,127 <sup>2</sup>	4,739 <sup>2</sup>	3,604 <sup>2</sup>	5,500
Italy	3,000	2,756	2,486	2,866	2,087	1,711						
Hungary	1,900	1,764	1,644	1,653	1,539	1,360	1,100	882	794	658	389	142
India	1,900	1,909	1,882	1,691	1,768	1,680	1,610	1,517	1,237	1,346	1,373	1,426
Japan	6,500	5,947	4,638	3,858	3,897	3,362	2,583	2,265	2,342	1,874	1,269	436
Luxembourg	12,100	10,370	8,523	8,445	7,703	7,167	5,332	3,352	1,916	1,041	608	1,177
Mexico	3,900	3,555	3,116	2,931	3,309	3,391	2,702	2,507	2,705	1,888	1,426	291
Netherlands	2,650	578	512	504	561	500	390	380	268	353	277	201
Poland	1,150	1,074	1,023	948	755	609						
Rumania	5,500	4,894	4,370	3,965	3,509	3,078	2,750	2,539	2,116	1,731	1,344	546
Saar	1,000	843	693	793	769	720						
South Africa	3,750	3,649	3,093	2,959	3,112	2,869	2,092	1,938	1,922	780	317	
Spain	1,700	1,681	1,523	1,366	1,326	1,045	830	699	750	680	568	594
Sweden	1,350	1,337	1,209	985	1,060	902	900	793	664	581	656	617
Switzerland	2,650	2,342	2,052	1,969	1,656	1,567	1,511	1,270	1,311	1,335	1,327	
United Kingdom	23,200	22,166	20,742	19,723	18,388	17,516	18,240	17,256	16,662	12,246	14,220	13,243
U. S. S. R.	55,000	49,936	45,203	41,800	36,029	34,500	29,800	23,600	18,700	14,700	13,400	12,300
United States	115,000	117,036	88,312	111,610	93,168	105,200	96,836	77,978	88,894	84,894	66,603	79,702
Yugoslavia	950	889	679	568	488	470						
Others	2,150	1,816	1,546	2,280	1,524							
<b>Totals</b>	<b>312,700</b>	<b>297,011</b>	<b>245,013</b>	<b>258,706</b>	<b>229,423</b>	<b>229,945</b>	<b>204,348</b>	<b>173,386</b>	<b>167,107</b>	<b>147,156</b>	<b>120,345</b>	<b>125,896</b>

\* Estimated. <sup>1</sup> Revised. <sup>2</sup> British, French and United States Zones.

## U. S. MONTHLY STEEL INGOT PRODUCTION

Openhearth, Bessemer and Electric Furnace Ingots and Steel for Castings, Net Tons; U. S. Only

	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943
Jan.	2,852,540	1,685,665	1,157,745	2,276,596	3,279,473	3,474,353	5,398,326	1,984,815	3,663,004	5,764,723	6,928,083	7,112,106	7,424,522
Feb.	2,892,154	1,681,421	1,221,664	2,521,472	3,169,909	3,379,587	5,050,824	1,942,795	3,448,120	4,525,797	6,237,900	6,512,535	6,824,604
March	3,468,208	1,627,030	1,022,675	3,190,040	3,273,910	3,810,436	5,970,247	2,293,894	3,929,387	4,389,183	7,131,641	7,392,111	7,674,578
April	3,141,887	1,429,848	1,531,813	3,346,922	3,017,177	4,494,782	5,801,540	2,196,413	3,431,690	4,100,474	6,756,948	7,121,291	7,373,703
May	2,897,385	1,277,302	2,250,236	3,875,202	3,009,425	4,614,529	5,894,260	2,681,169	3,372,636	4,967,782	7,053,238	7,382,578	7,549,691
June	2,416,078	1,036,102	2,919,687	3,467,612	2,580,771	4,543,888	4,787,710	1,868,848	3,606,729	5,657,443	6,800,730	7,015,302	7,039,353
July	2,143,351	915,738	3,607,288	1,697,879	2,591,240	4,473,940	5,212,832	2,259,677	3,648,639	5,724,625	6,821,682	7,144,958	7,407,876
Aug.	1,949,462	961,153	3,260,279	1,574,649	3,331,770	4,782,442	5,580,683	2,903,805	4,341,726	6,186,383	7,000,957	7,227,655	7,586,464
Sept.	1,754,817	1,125,892	2,599,370	1,446,551	3,227,876	4,744,841	4,977,592	3,029,736	4,881,601	6,056,246	6,819,766	7,057,519	7,514,339
Oct.	1,805,653	1,233,957	2,373,729	1,689,272	3,590,945	5,182,430	3,881,819	3,554,812	6,223,126	6,644,542	7,242,683	7,579,514	7,614,117
Nov.	1,807,315	1,171,710	1,731,930	1,836,268	3,599,687	4,941,014	2,464,793	4,072,676	6,292,322	6,469,107	6,969,987	7,179,812	7,371,975
Dec.	1,477,529	977,389	2,047,780	2,239,126	3,511,702	5,756,843	1,685,273	3,751,253	5,958,893	6,495,357	7,163,999	7,304,540	7,255,144
<b>Total</b>	<b>28,606,379</b>	<b>5,123,207</b>	<b>25,724,196</b>	<b>29,181,329</b>	<b>38,183,705</b>	<b>53,449,085</b>	<b>56,635,899</b>	<b>31,751,983</b>	<b>52,797,783</b>	<b>66,981,662</b>	<b>82,927,557</b>	<b>86,029,921</b>	<b>88,836,366</b>
Jan.	7,592,603	7,224,312	3,872,887	7,222,612	7,480,878	8,197,390	7,941,797	8,848,466	9,136,117	9,897,962	7,951,486	8,837,736	10,828,231
Feb.	7,194,009	6,652,765	1,392,662	6,430,401	6,948,017	7,493,942	6,803,032	7,770,407	8,657,210	9,932,779	7,083,237	8,496,934	10,118,995
March	7,826,257	7,715,929	6,508,784	7,318,974	7,616,770	8,401,796	7,497,822	7,076,630	9,404,191	10,168,098	7,289,670	9,981,754	10,924,788
April	7,593,686	2,289,867	5,801,195	7,051,842	6,224,487	7,796,165	8,224,504	6,845,979	7,991,142	9,545,638	6,970,937	9,615,095	10,536,121
May	7,702,576	7,448,667	4,072,620	7,339,014	7,580,642	7,598,990	8,564,207	9,100,155	8,204,596	9,997,080	7,472,738	10,328,316	10,490,376
June	7,234,257	6,840,522	5,625,773	6,977,714	7,265,249	6,504,656	8,143,230	8,662,348	1,639,491	9,404,479	7,363,634	9,746,467	9,721,436
July	7,948,367	6,985,571	6,618,683	6,578,685	7,075,517	5,784,831	8,082,922	6,684,495	1,626,958	9,275,673	6,627,597	9,100,946	1,622,163
Aug.	7,496,913	5,735,317	6,824,522	6,991,152	7,446,834	6,722,771	8,242,174	8,739,095	8,498,687	9,405,560	6,666,907	9,594,545	8,122,597
Sept.	7,235,111	5,982,475	6,055,586	6,797,457	7,424,844	6,597,935	8,204,997	8,660,357	9,062,105	8,893,428	6,807,483	9,882,325	10,422,659
Oct.	7,620,885	5,996,776	6,951,742	7,570,152	7,996,895	9,283,347	8,752,686	9,121,866	9,806,830	9,462,722	7,701,553	10,501,090	11,048,513
Nov.	7,278,719	6,300,466	6,457,771	7,242,427	7,797,558	4,223,129	8,023,393	8,799,352	9,438,886	8,690,052	8,089,427	10,247,398	10,566,000*
Dec.	7,336,170	6,057,937	5,760,501	7,375,641	7,780,779	7,728,224	8,355,311	8,890,678	9,690,162	7,946,326	8,287,073	10,503,519	10,600,000*
<b>Total</b>	<b>89,641,575</b>	<b>79,701,624</b>	<b>68,612,716</b>	<b>84,894,071</b>	<b>88,640,470</b>	<b>77,978,176</b>	<b>96,836,075</b>	<b>105,199,846</b>	<b>93,156,375</b>	<b>111,609,719</b>	<b>88,311,652</b>	<b>117,036,085</b>	<b>115,900,000*</b>

\* Estimate. <sup>1</sup> Preliminary

Source: American Iron and Steel Institute

## WORLD STEEL DATA

Data in the table at left are based on an extensive Iron Age study. Assisting in the study were the Intelligence Dept. of the British Iron & Steel Federation, Chambre Syndicate de la Siderurgie Francaise, United Nations, American Iron and Steel Institute and Iron Age correspondents throughout the world. Though based on the best available intelligence, the accuracy of Iron Curtain steel data is naturally not of the same order as that of the free world.

Financial analysis of steel industry  
... Twenty-nine steel producers covered represent 93 per cent of U.S. ingot capacity.

## STEEL INDUSTRY

### FINANCIAL ANALYSIS OF THE STEEL INDUSTRY

For years 1951 through 1955. Data Cover 29 Companies Representing 93 Pct of U. S. Ingot Capacity

COMPANY	Year	Ingot Capacity Net Tons	Ingot Production Net Tons	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net Income Percent of Sales	Earnings Per Common Share	Invested Capital
U. S. Steel Corp.	1955	38,877,000	35,309,000	90.8	25,506,000	\$4,097,680,267	\$366,000,000	\$370,099,353	9.0	\$6.44	\$2,868,855,588
	1954	38,715,000	28,355,000	73.2	20,239,000	3,250,368,279	190,000,000	195,417,611	6.0	6.46	2,672,832,918
	1953	36,399,000	35,827,000	98.4	25,091,000	3,861,034,728	323,000,000	220,907,370	5.8	7.94	2,319,132,239
	1952	34,842,000	29,436,000	85.0	21,133,000	3,137,387,336	117,000,000	143,667,746	4.6	4.54	2,197,124,774
	1951	34,643,000	34,323,000	101.3	24,626,000	3,524,121,226	398,000,000	184,359,787	5.2	6.10	2,150,858,480
Bethlehem Steel Corp.	1955	19,100,000	18,820,912	98.5	13,553,823	2,114,599,636	181,000,000	180,191,708	8.5	18.09	1,522,975,045
	1954	18,500,000	13,810,076	74.6	10,226,752	1,667,377,179	119,000,000	132,837,154	8.0	13.18	1,232,094,615
	1953	17,600,000	17,662,687	100.4	12,712,994	2,094,952,155	161,000,000	133,947,637	6.4	13.30	1,163,636,586
	1952	16,800,000	14,116,342	84.0	10,290,587	1,701,541,383	66,000,000	90,900,771	5.3	8.80	1,217,957,726
	1951	16,000,000	16,405,677	102.5	12,138,732	1,799,806,346	162,000,000	106,531,293	5.9	10.43	1,093,925,932
Republic Steel Corp.	1955	10,262,000	9,680,121	97.1	6,868,782	1,188,599,765	84,000,000	86,271,491	7.3	5.59	650,126,815
	1954	10,262,000	6,972,812	69.8	5,012,330	846,310,670	49,900,000	52,875,164	6.2	7.10	629,318,251
	1953	10,262,000	9,630,454	94.5	7,135,745	1,137,123,547	100,500,000	56,743,547	5.0	9.25	620,878,235
	1952	10,262,000	7,991,238	82.8	6,025,990	918,447,135	42,600,000	44,274,053	4.8	7.21	606,379,373
	1951	9,490,000	9,142,096	102.0	6,993,619	1,052,715,386	117,500,000	54,921,541	5.2	9.03	562,829,895
Jones & Laughlin Steel Corp.	1955	6,166,500	6,190,000	100.0	4,418,000	696,538,000	46,500,000	50,104,000	7.2	7.73	526,212,000
	1954	6,166,500	4,570,000	74.0	3,203,000	492,941,000	22,543,000	25,032,000	5.1	3.80	497,439,000
	1953	6,166,500	6,033,000	96.0	4,278,000	624,387,000	27,900,000	31,015,000	5.0	4.77	492,373,000
	1952	5,900,000	4,710,000	83.0	3,332,000	495,401,000	5,858,000	19,482,000	3.9	2.91	499,596,000
	1951	4,847,000	5,032,000	104.0	4,000,000	564,330,000	54,339,000	30,998,000	5.5	4.76	463,219,000
National Steel Corp.	1955	6,000,000	6,000,000	100.0	4,222,018,919	48,275,000	48,289,453	7.8	6.54	452,911,967	
	1954	6,000,000	6,000,000	100.0	4,464,058,380	27,750,000	30,334,871	6.3	4.12	427,082,106	
	1953	5,650,000	5,650,000	100.0	634,178,060	69,325,000	50,334,130	7.9	6.84	418,230,307	
	1952	5,100,000	5,100,000	100.0	548,625,817	42,000,000	37,559,477	6.9	5.10	385,035,319	
	1951	4,750,000	4,750,000	100.0	619,461,408	95,000,000	45,267,093	7.32	6.15	354,558,375	
Youngstown Sheet & Tube Co.	1955	5,520,000	5,571,556	100.9	3,944,492	626,232,840	41,867,500	41,701,140	6.8	12.34	462,890,771
	1954	5,520,000	3,868,525	70.1	2,606,540	433,406,272	12,104,000	20,182,500	4.7	6.02	432,764,332
	1953	4,947,500	5,091,876	102.9	3,675,229	554,059,086	27,900,000	30,639,716	5.6	9.21	424,993,128
	1952	4,370,000	3,937,490	90.1	2,857,500	439,623,183	16,890,000	22,915,822	5.3	6.84	399,815,973
	1951	4,370,000	4,451,854	104.7	3,362,104	489,305,162	38,692,000	30,644,201	6.34	9.15	345,850,199
Armco Steel Corp.	1955	4,950,000	5,099,905	103.0	4,003,532	692,683,234	66,613,787	64,350,699	9.3	6.05	444,015,755
	1954	4,902,000	4,448,772	90.8	3,171,401	532,045,314	42,522,317	41,100,266	7.7	7.86	403,749,452
	1953	4,718,000	4,704,773	99.7	3,375,630	568,919,900	50,788,608	33,902,462	5.8	6.50	366,931,248
	1952	4,525,000	4,042,473	89.3	3,078,632	438,575,218	43,085,161	31,677,967	6.0	6.00	375,906,210
	1951	4,525,000	4,357,562	96.3	3,386,554	534,834,667	69,141,292	35,004,487	6.54	6.69	338,768,986
Inland Steel Co.	1955	5,000,000	5,189,509	103.8	3,954,567	663,317,374	53,050,000	52,466,098	8.0	9.52	416,415,101
	1954	4,700,000	4,522,257	96.2	3,392,659	537,024,479	37,930,000	41,287,152	7.7	7.92	287,259,955
	1953	4,500,000	4,513,076	100.3	3,712,000	579,509,058	39,379,000	33,867,184	5.9	6.90	344,188,324
	1952	3,750,000	3,307,253	88.2	3,307,253	460,451,935	13,117,000	23,755,218	5.2	4.85	337,631,507
	1951	3,750,000	3,837,268	102.3	3,596,888	521,449,655	53,520,000	34,398,585	6.6	7.02	290,682,261
Colorado Fuel & Iron Corp.	1955	2,471,500	1,936,402	78.3	1,627,587	257,543,050	10,681,890	10,887,163	4.2	3.79	170,325,365
	1954	2,469,035	1,845,693	74.8	1,687,950	250,235,696	6,125,000	7,051,729	2.8	2.46	167,132,678
	1953	2,311,785	2,130,451	92.2	1,948,414	248,835,574	14,572,400	8,031,224	3.2	3.09	166,459,029
	1952	2,024,000	1,892,485	93.5	1,575,987	195,757,164	8,461,500	5,761,965	2.9	2.64	133,736,055
	1951	1,522,664	1,615,246	106.1	1,708,855	191,444,412	18,936,500	10,382,228	5.42	5.06	96,882,288
Wheeling Steel Corp.	1955	2,130,000	2,067,288	96.6	248,445,016	18,400,000	17,295,711	6.9	8.12	229,796,667	
	1954	2,130,000	1,589,643	74.6	190,224,955	8,483,000	9,595,740	5.0	5.48	205,866,412	
	1953	1,860,000	1,797,419	96.6	219,509,774	14,036,000	12,458,311	5.7	7.49	205,968,477	
	1952	1,860,000	1,464,985	78.8	180,285,277	7,475,000	10,950,780	6.1	6.43	201,707,487	
	1951	1,860,000	1,874,236	100.8	229,012,621	33,662,000	17,392,959	7.59	10.96	192,703,514	
Sharon Steel Corp.	1955	1,550,000	1,529,688	98.6	1,092,593	173,095,949	7,840,000	7,967,622	4.6	7.26	73,098,951
	1954	1,550,000	1,446,515	93.3	611,668	99,347,910	1,865,000	3,134,664	3.2	2.85	68,711,329
	1953	1,550,000	1,527,706	98.6	1,144,488	168,268,506	7,240,000	6,709,625	4.0	6.10	69,306,465
	1952	1,550,000	1,284,170	82.8	944,893	132,376,426	2,750,000	5,120,414	3.9	4.65	68,016,840
	1951	1,550,000	1,600,205	103.2	1,128,433	169,961,946	8,480,000	8,861,187	5.2	8.06	68,296,428
Kaiser Steel Corp.	1955	1,536,000	1,432,742	93.3	929,556	136,148,919	3,325,000	5,471,236	4.2	1.08	245,329,442
	1954	1,536,000	1,362,877	90.0	933,843	128,491,032	3,325,000	7,926,666	6.2	1.75	245,984,849
	1953	1,536,000	1,456,904	100.1	951,887	134,500,041	9,700,000	9,121,294	6.8	2.12	240,847,614
	1952	1,380,000	1,381,862	100.1	941,108	117,925,049	9,900,000	10,399,306	8.8	2.82	206,125,843
	1951	1,380,000	1,217,196	101.4	389,420	100,471,475	6,690,017	7,510,561	7.5	1.86	172,634,377
Pittsburgh Steel Co.	1955	1,320,000	1,303,503	98.8	1,132,437	177,707,556	4,372,000	7,515,470	4.3	4.31	118,397,226
	1954	1,320,000	1,070,386	76.2	784,420	124,489,418	973,000	2,170,894	1.8	.62	116,385,912
	1953	1,404,000	1,037,335	86.4	1,009,511	141,471,302	5,310,000	4,468,195	3.3	2.61	114,525,878
	1952	1,152,000	971,029	85.3	956,829	130,158,219	4,437,000	5,150,034	4.0	3.25	104,203,194
	1951	1,072,000	1,091,364	100.8	1,140,539	150,462,914	16,071,000	7,331,599	4.87	5.99	61,193,695
Crucible Steel Co. of America	1955	1,351,400	1,222,176	90.4	237,715,380	237,715,380	15,570,000	13,208,062	5.6	8.05	128,847,921
	1954	1,351,400	1,351,400	100.0	160,621,738	160,621,738	4,398,000	3,705,952	2.3	2.83	119,995,023
	1953	1,351,400	1,351,400	100.0	232,276,349	232,276,349	6,896,976	5,109,802	2.2	5.28	122,320,246
	1952	1,350,700	1,350,700	100.0	180,266,483	180,266,483	5,577,506	5,394,520	3.0	6.13	124,250,177
	1951	1,196,960	1,196,960	100.0	202,868,727	202,868,727	18,099,421	8,363,225	4.1	11.89	105,675,766
Barium Steel Corp.	1955	893,000	893,000	100.0	75,064,700	75,064,700	995,255	655,319	.9	.20	22,822,552
	1954	893,000	893,000	100.0	53,484,604	53,484,604	1,772,500	441,212	0.8	.14	22,222,682
	1953	893,000	893,000	100.0	99,719,175	99,719,175	3,849,840	2,321,140	2.6	1.01	21,097,017
	1952	893,000	893,000	100.0	99,052,028	99,052,028	6,566,295	2,746,050	2.8	1.22	19,588,715
	1951	893,000	893,000	100.0	627,220	627,220	8,665,674	4,164,177	4.6	1.87	18,345,693

# STEEL INDUSTRY

Financial analysis of steel industry showing capacity, sales earnings data, shipments, production, etc., by company.

## FINANCIAL ANALYSIS (Continued)

COMPANY	Year	Ingot Capacity Net Tons	Ingot Production Net Tons	Percent of Capacity Operated	Steel Shipments Net Tons	Net Sales and Operating Revenue	Provision for Federal Income Taxes	Net Income	Net Income Percent of Sales	Earnings Per Common Share	Invested Capital
Allegheny Ludlum Steel Corp.	1955	864,200	683,195	79.1	484,231	\$255,587,054	\$16,554,000	\$14,985,060	5.9	8.25	\$121,125,921
	1954	864,200	431,068	49.9	305,208	170,056,405	4,459,000	4,246,083	2.5	2.30	80,073,450
	1953	864,200	680,619	78.8	537,341	242,091,546	11,670,000	7,791,287	3.2	4.40	79,561,980
	1952	889,200	569,921	64.1	467,838	190,091,165	2,900,000	5,940,324	3.1	3.37	75,439,053
	1951	817,200	817,058	100.0	676,960	229,090,224	20,190,000	8,534,140	3.86	5.40	75,240,773
Northwestern Steel & Wire Co.	1955	825,000	502,443	60.9	391,675	51,403,405	4,610,000	4,131,969	8.0	5.05	29,585,467
	1954	825,000	308,780	37.4	246,170	35,628,171	1,065,000	1,018,754	2.9	1.25	17,127,634
	1953	825,000	361,550	43.8	336,056	44,291,906	485,000	303,163	.7	.37	15,838,880
	1952	573,000	313,856	83.9	276,023	34,026,721	645,000	1,830,601	5.4	2.24	15,535,717
	1951	321,000	338,690	105.6	279,682	42,961,692	3,586,700	2,915,271	6.8	3.56	12,350,837
Granite City Steel Co.	1955	1,080,000	1,091,389	101.0	961,101	116,293,657	13,703,700	12,610,820	11.0	6.05	102,436,342
	1954	1,080,000	634,909	58.8	559,112	69,265,197	4,400,700	4,012,192	5.8	2.04	90,232,972
	1953	720,000	937,801	130.3	805,455	87,856,006	6,953,500	6,488,452	7.4	3.77	90,878,115
	1952	720,000	821,574	86.3	698,767	74,587,630	3,917,000	4,985,954	6.7	3.17	82,648,433
	1951	720,000	746,911	103.7	821,198	86,773,193	7,980,000	5,142,520	5.9	4.02	87,256,370
Acme-Newport Steel Corp.	1955	708,537	480,038	68.0	334,203	37,419,274	979,638	915,233	.....	.86	22,891,455
	1954	708,537	154,656	29.0	119,238	16,371,670	255,000	82,012	0.3	.06	21,976,248
	1953	708,537	528,024	75.0	389,796	63,969,993	2,400,000	2,221,935	3.5	2.06	21,563,738
Lukens Steel Co.	1955	750,000	691,444	92.2	490,569	79,307,572	2,400,000	1,731,238	2.2	5.44	34,334,813
	1954	675,000	631,834	93.6	455,153	74,954,710	2,065,000	2,014,791	2.7	6.33	33,589,833
	1953	675,000	763,879	113.2	590,635	97,850,937	9,325,000	3,607,713	3.7	11.35	30,675,958
	1952	675,000	555,102	82.2	403,771	69,616,358	3,631,165	2,316,791	3.3	7.29	29,637,411
	1951	675,000	686,083	101.6	541,376	80,546,416	8,805,500	3,549,567	4.4	11.16	25,130,524
Detroit Steel Corp.	1955	1,290,000	888,443	68.9	787,788	101,803,010	\$715,966	6,317,860	6.2	2.07	85,693,209
	1954	860,000	442,753	67.1	371,061	51,688,448	71,338	1,182,528	2.3	.49	40,265,485
	1953	860,000	529,044	80.2	583,421	93,391,509	6,612,624	5,230,259	5.6	2.16	39,082,957
	1952	860,000	529,432	80.2	609,437	87,421,483	4,673,235	4,276,666	4.9	1.80	35,631,387
	1951	860,000	644,788	97.7	780,940	113,747,043	21,812,229	10,514,896	9.2	8.87	33,726,306
Alan Wood Steel Co.	1955	825,000	665,908	106.5	462,046	58,375,609	1,619,000	2,551,530	4.4	3.32	35,951,285
	1954	825,000	345,918	55.3	241,288	36,065,476	216,000	1,246,251	3.4	1.42	36,647,492
	1953	825,000	598,334	95.7	442,537	59,756,645	2,457,000	3,213,690	5.4	4.63	31,561,852
	1952	825,000	658,449	105.4	473,983	60,479,849	2,475,000	2,251,073	3.7	3.17	30,122,666
	1951	825,000	623,232	99.7	465,231	58,764,602	4,192,000	2,303,720	3.9	3.32	29,481,987
Copperweld Steel Co.	1955	618,380	473,778	94.7	386,408	58,191,338	2,990,000	2,365,459	3.0	2.81	35,574,896
	1954	618,380	396,073	79.2	311,140	45,364,073	1,520,000	927,065	1.9	1.32	29,284,898
	1953	618,380	389,787	91.7	312,068	83,803,418	3,120,000	2,852,076	3.4	5.05	24,223,760
	1952	618,380	389,787	91.7	312,068	71,642,488	2,373,500	2,304,387	3.2	4.38	22,796,213
	1951	654,000	491,726	84.8	76,185,026	5,510,000	2,703,165	2,703,165	3.5	5.14	18,420,048
McLouth Steel Corp.	1955	1,200,000	960,000	80.0	368,667	144,987,476	7,375,000	8,148,342	5.6	5.66	127,716,528
	1954	960,000	434,370	56.4	368,667	77,000,000	2,090,000	1,894,890	1.42	1.42	132,513,536
	1953	960,000	528,734	91.2	368,667	115,560,000	5,241,501	5,241,501	4.41	4.41	94,027,396
	1952	960,000	491,726	84.8	368,667	9,600,000	4,227,864	4,227,864	4.44	4.44	36,035,896
Lone Star Steel Co.	1955	550,000	556,304	101.0	442,762	74,489,168	4,665,000	4,759,066	6.4	1.80	102,838,289
	1954	550,000	379,009	69.0	184,497	37,208,044	.....	1,008,778	2.7	.38	105,036,365
	1953	550,000	195,155	35.3	124,849	27,284,256	338,600	2,113,568	7.8	.80	84,294,641
Laclede Steel Co.	1955	500,000	473,778	94.7	386,408	58,191,338	4,700,000	4,047,053	7.0	19.62	24,658,700
	1954	500,000	396,073	79.2	311,140	45,364,073	3,050,000	2,943,150	6.5	14.27	22,106,598
	1953	440,000	427,514	97.2	362,040	50,834,319	4,975,000	2,703,805	5.3	13.11	20,736,280
	1952	410,000	413,292	100.8	355,630	47,545,026	2,764,000	2,132,746	4.5	10.34	17,353,323
	1951	410,000	389,682	95.2	380,230	47,657,001	5,075,000	2,797,998	5.87	13.57	16,926,698
Keystone Steel & Wire Co.	1955	425,000	416,090	97.90	344,414	62,020,363	8,830,268	8,768,519	14.1	4.68	31,296,790
	1954	425,000	334,444	78.7	275,229	49,332,276	6,981,536	6,114,772	12.4	3.26	26,278,271
	1953	425,000	356,969	84.0	269,799	44,554,153	4,861,627	4,149,946	9.3	2.21	23,163,498
	1952	425,000	323,956	81.0	264,809	48,939,590	6,116,646	4,073,232	8.3	2.17	22,013,553
	1951	400,000	323,956	81.0	264,809	44,406,154	6,130,840	4,724,286	10.64	2.82	20,940,321
Rotary Electric Steel Co.	1955	300,000	270,283	90.1	193,807	54,370,322	4,150,000	3,772,074	7.0	5.41	22,981,385
	1954	425,000	172,918	40.7	117,165	31,643,658	1,938,000	1,849,810	5.9	5.31	18,779,711
	1953	425,000	299,776	70.5	240,120	44,150,335	4,924,000	2,262,367	5.1	6.50	18,474,951
	1952	425,000	323,959	76.2	249,258	37,212,163	2,841,000	1,843,064	5.0	6.35	14,390,918
	1951	425,000	372,146	87.6	279,862	40,993,056	5,015,000	2,482,974	6.1	8.55	13,919,093
Continental Steel Corp.	1955	394,000	394,380	97.6	285,972	44,881,747	2,760,000	3,022,143	6.7	6.02	22,921,084
	1954	394,000	336,149	85.3	232,108	33,661,856	1,600,000	1,993,337	5.6	3.97	21,603,024
	1953	394,000	362,048	91.9	282,625	38,761,804	1,700,000	1,603,163	4.4	3.20	20,812,409
	1952	394,000	375,138	82.5	244,169	35,716,970	1,880,000	1,477,030	4.1	2.94	20,111,151
	1951	394,000	363,484	92.3	280,501	39,866,978	4,150,000	1,530,371	3.84	3.05	16,486,436
GRAND TOTALS	1955	117,257,517	109,000,000*	93.0	78,900,000*	\$13,225,990,770	\$1,027,297,914	\$1,034,821,961	7.8	7.16	\$9,132,827,147
	1954	115,324,632	81,900,000	71.0	58,700,000	9,977,835,487	553,857,391	690,383,964	6.0	5.99	8,205,155,029
	1953	109,658,940	104,200,000	94.9	74,600,000	12,285,361,086	932,780,178	690,920,244	5.6	.....	7,707,824,207
	1952	103,261,455	88,700,000	85.8	63,200,000	10,082,375,504	426,078,975	501,451,020	4.9	.....	7,363,066,759
	1951	98,273,224	99,998,316	100.9	71,000,000	11,101,430,075	1,213,358,701	638,483,389	5.8	.....	6,685,403,714

\* Estimated on operating rate.



Steel Prices: Hot and cold rolled sheet and strip, galvanized sheets, tinplate and high-speed tool steel.

## STEEL INDUSTRY

### COLD-ROLLED STRIP

At Pittsburgh, Cents Per Pound

	1940*	1946*	1947	1948	1949	1950
Jan.	2.80	2.80	3.20	3.55	4.00	4.20
Feb.	2.80	2.93	3.20	3.55	4.00	4.21
Mar.	2.80	3.05	3.20	3.55	4.00	4.21
Apr.	2.68	3.05	3.20	3.55	4.00	4.21
May	2.80	3.05	3.20	3.53	4.00	4.21
June	2.80	3.05	3.20	3.53	4.00	4.21
July	2.80	3.05	3.27	3.85	4.00	4.21
Aug.	2.80	3.05	3.55	4.00	4.00	4.21
Sept.	2.80	3.05	3.55	4.00	4.00	4.21
Oct.	2.80	3.05	3.55	4.00	4.00	4.21
Nov.	2.80	3.05	3.55	4.00	4.00	4.21
Dec.	2.80	3.17	3.55	4.00	4.06	4.75
Average	2.79	3.03	3.35	3.76	4.01	4.25

	1951	1952	1953	1954	1955	1956
Jan.	4.75	4.65	5.10	5.45	5.75	6.25
Feb.	4.75	4.65	5.10	5.45	5.75	6.25
Mar.	4.75	4.65	5.10	5.45	5.75	6.25
Apr.	4.75	4.65	5.10	5.45	5.75	6.25
May	4.75	4.65	5.10	5.45	5.75	6.25
June	4.75	4.65	5.25	5.45	5.75	6.25
July	4.75	4.74	5.45	5.73	6.12	6.25
Aug.	4.75	5.10	5.45	5.75	6.25	6.61
Sept.	4.75	5.10	5.45	5.75	6.25	6.65
Oct.	4.75	5.10	5.45	5.75	6.25	6.65
Nov.	4.75	5.10	5.45	5.75	6.25	6.65
Dec.	4.75	5.10	5.45	5.75	6.25	6.65
Average	4.75	4.85	5.29	5.60	5.98	6.48

\* 1941-1945 = 2.80¢.

### COLD-ROLLED SHEETS

At Pittsburgh, Cents Per Pound

	1940*	1946*	1947	1948	1949	1950
Jan.	3.05	3.05	3.20	3.55	4.00	4.10
Feb.	3.05	3.16	3.20	3.55	4.00	4.10
Mar.	3.05	3.275	3.20	3.55	4.00	4.10
Apr.	2.93	3.275	3.20	3.55	4.00	4.10
May	3.05	3.275	3.20	3.49	4.00	4.10
June	3.05	3.275	3.20	3.49	4.00	4.10
July	3.05	3.275	3.27	3.62	4.00	4.10
Aug.	3.05	3.275	3.55	4.00	4.00	4.10
Sept.	3.05	3.275	3.55	4.00	4.00	4.10
Oct.	3.05	3.275	3.55	4.00	4.00	4.10
Nov.	3.05	3.275	3.55	4.00	4.00	4.10
Dec.	3.05	3.215	3.55	4.00	4.04	4.35
Average	3.05	3.242	3.35	3.73	4.00	4.12

	1951	1952	1953	1954	1955	1956
Jan.	4.35	4.35	4.575	4.775	4.95	5.325
Feb.	4.35	4.35	4.575	4.775	4.95	5.325
Mar.	4.35	4.35	4.575	4.775	4.95	5.325
Apr.	4.35	4.35	4.575	4.775	4.95	5.325
May	4.35	4.35	4.575	4.775	4.95	5.325
June	4.35	4.35	4.660	4.775	4.95	5.325
July	4.35	4.395	4.775	4.939	5.231	5.325
Aug.	4.35	4.575	4.775	4.95	5.325	5.660
Sept.	4.35	4.575	4.775	4.95	5.325	5.75
Oct.	4.35	4.575	4.775	4.95	5.325	5.75
Nov.	4.35	4.575	4.775	4.95	5.325	5.75
Dec.	4.35	4.575	4.775	4.95	5.325	5.75
Average	4.35	4.449	4.682	4.862	5.127	5.488

\* 1941-1945 = 3.05¢.

### GALVANIZED SHEETS

At Pittsburgh, Cents Per Pound

	1945	1946	1947	1948	1949	1950
Jan.	3.50	3.70	3.55	3.95	4.40	4.40
Feb.	3.50	3.88	3.55	3.95	4.40	4.40
Mar.	3.62	4.05	3.55	3.95	4.40	4.40
Apr.	3.65	4.05	3.55	3.95	4.40	4.40
May	3.66	4.05	3.55	3.91	4.40	4.40
June	3.70	4.05	3.55	3.91	4.40	4.40
July	3.70	4.05	3.83	4.03	4.40	4.40
Aug.	3.70	4.05	3.95	4.40	4.40	4.40
Sept.	3.70	4.05	3.95	4.40	4.40	4.40
Oct.	3.70	4.05	3.95	4.40	4.40	4.40
Nov.	3.70	4.05	3.95	4.40	4.40	4.40
Dec.	3.70	*3.65	3.95	4.40	4.40	4.80
Average	3.85	3.99	3.72	4.13	4.40	4.43

	1951	1952	1953	1954	1955	1956
Jan.	4.80	4.80	5.075	5.275	5.45	5.85
Feb.	4.80	4.80	5.075	5.275	5.45	5.85
Mar.	4.80	4.80	5.075	5.275	5.45	5.85
Apr.	4.80	4.80	5.075	5.275	5.45	5.85
May	4.80	4.80	5.075	5.275	5.45	5.85
June	4.80	4.80	5.160	5.275	5.45	5.85
July	4.80	4.855	5.275	5.439	5.75	5.85
Aug.	4.80	5.075	5.275	5.45	5.85	6.120
Sept.	4.80	5.075	5.275	5.45	5.85	6.30
Oct.	4.80	5.075	5.275	5.45	5.85	6.30
Nov.	4.80	5.075	5.275	5.45	5.85	6.30
Dec.	4.80	5.075	5.275	5.45	5.85	6.30
Average	4.80	4.919	5.182	5.362	5.64	6.023

\* Based on 10 gage since December 1946; 24 gage base up to that time.

### HOT-ROLLED SHEETS

At Pittsburgh, Cents Per Pound

	1945	1946	1947	1948	1949	1950
Jan.	2.10	2.20	2.50	2.83	3.28	3.35
Feb.	2.10	2.21	2.50	2.83	3.28	3.35
Mar.	2.18	2.43	2.50	2.83	3.28	3.35
Apr.	2.20	2.43	2.50	2.83	3.28	3.35
May	2.20	2.43	2.50	2.77	3.25	3.35
June	2.20	2.43	2.50	2.77	3.25	3.35
July	2.20	2.43	2.56	2.89	3.25	3.35
Aug.	2.20	2.43	2.83	3.28	3.25	3.35
Sept.	2.20	2.43	2.80	3.28	3.25	3.35
Oct.	2.20	2.43	2.80	3.28	3.25	3.35
Nov.	2.20	2.43	2.80	3.28	3.25	3.35
Dec.	2.20	2.49	2.80	3.28	3.29	3.60
Average	2.18	2.40	2.63	3.00	3.26	3.37

	1951	1952	1953	1954	1955	1956
Jan.	3.60	3.60	3.775	3.925	4.05	4.325
Feb.	3.60	3.60	3.775	3.925	4.05	4.325
Mar.	3.60	3.60	3.775	3.925	4.05	4.325
Apr.	3.60	3.60	3.775	3.925	4.05	4.325
May	3.60	3.60	3.775	3.925	4.05	4.325
June	3.60	3.60	3.838	3.925	4.05	4.325
July	3.60	3.635	3.925	4.042	4.26	4.325
Aug.	3.60	3.775	3.925	4.05	4.325	4.535
Sept.	3.60	3.775	3.925	4.05	4.325	4.675
Oct.	3.60	3.775	3.925	4.05	4.325	4.675
Nov.	3.60	3.775	3.925	4.05	4.325	4.675
Dec.	3.60	3.775	3.925	4.05	4.325	4.675
Average	3.60	3.676	3.855	3.967	4.189	4.459

### HOT-ROLLED STRIP

At Pittsburgh, Cents Per Pound

	1940†	1946*	1947	1948	1949	1950
Jan.	2.10	2.10	2.50	2.80	3.28	3.25
Feb.	2.10	2.23	2.50	2.80	3.28	3.25
Mar.	2.10	2.35	2.50	2.80	3.28	3.25
Apr.	1.98	2.35	2.50	2.80	3.28	3.25
May	2.10	2.35	2.50	2.80	3.25	3.25
June	2.10	2.35	2.50	2.80	3.25	3.25
July	2.10	2.35	2.56	2.91	3.25	3.25
Aug.	2.10	2.35	2.83	3.28	3.25	3.25
Sept.	2.10	2.35	2.80	3.28	3.25	3.25
Oct.	2.10	2.35	2.80	3.28	3.25	3.25
Nov.	2.10	2.35	2.80	3.28	3.25	3.25
Dec.	2.10	2.47	2.83	3.28	3.26	3.50
Average	2.09	2.33	2.63	3.03	3.26	3.27

	1951	1952	1953	1954	1955	1956
Jan.	3.50	3.50	3.725	3.925	4.05	4.325
Feb.	3.50	3.50	3.725	3.925	4.05	4.325
Mar.	3.50	3.50	3.725	3.925	4.05	4.325
Apr.	3.50	3.50	3.725	3.925	4.05	4.325
May	3.50	3.50	3.725	3.925	4.05	4.325
June	3.50	3.50	3.810	3.925	4.05	4.325
July	3.50	3.545	3.925	4.042	4.256	4.325
Aug.	3.50	3.725	3.925	4.05	4.325	4.535
Sept.	3.50	3.725	3.925	4.05	4.325	4.675
Oct.	3.50	3.725	3.925	4.05	4.325	4.675
Nov.	3.50	3.725	3.925	4.05	4.325	4.675
Dec.	3.50	3.725	3.925	4.05	4.325	4.675
Average	3.50	3.616	3.832	3.987	4.181	4.459

\* Over 6 in.; add 0.10¢ for 6 in. and under from February through November 1946.  
† 1941-1945 = 2.10¢.

### STEEL PLATES

At Pittsburgh, Cents Per Pound

	1945	1946	1947	1948	1949	1950
Jan.	2.10	2.25	2.65	2.95	3.50	3.50
Feb.	2.10	2.38	2.65	2.95	3.50	3.50
Mar.	2.20	2.50	2.65	2.95	3.50	3.50
Apr.	2.20	2.50	2.65	2.95	3.50	3.50
May	2.21	2.50	2.65	2.93	3.40	3.50
June	2.25	2.50	2.71	2.93	3.40	3.50
July	2.25	2.50	2.95	3.07	3.40	3.50
Aug.	2.25	2.50	3.185	3.50	3.40	3.50
Sept.	2.25	2.50	2.95	3.50	3.40	3.50
Oct.	2.25	2.50	2.95	3.50	3.40	3.50
Nov.	2.25	2.50	2.95	3.50	3.40	3.50
Dec.	2.25	2.50	2.95	3.50	3.44	3.70
Average	2.21	2.47	2.80	3.19	3.43	3.52

	1951	1952	1953	1954	1955	1956
Jan.	3.70	3.70	3.90	4.10	4.225	4.50
Feb.	3.70	3.70	3.90	4.10	4.225	4.50
Mar.	3.70	3.70	3.90	4.10	4.225	4.50
Apr.	3.70	3.70	3.90	4.10	4.225	4.50
May	3.70	3.70	3.90	4.10	4.225	4.50
June	3.70	3.70	3.98	4.10	4.225	4.50
July	3.70	3.74	4.10	4.217	4.431	4.50
Aug.	3.70	3.90	4.10	4.225	4.50	4.71
Sept.	3.70	3.90	4.10	4.225	4.50	4.85
Oct.	3.70	3.90	4.10	4.225	4.50	4.85
Nov.	3.70	3.90	4.10	4.225	4.50	4.85
Dec.	3.70	3.90	4.10	4.225	4.50	4.85
Average	3.70	3.78	4.01	4.162	4.356	4.63

### HIGH SPEED TOOL STEEL

18-4-1, Cents Per Pound

# STEEL INDUSTRY

Steel Prices: Hot-rolled  
and cold-finished bars, wire,  
structurals, rails, pipe and  
stainless steel sheets.

## MERCHANT BARS

At Pittsburgh, Cents Per Pound

	1945	1946	1947	1948	1949	1950
Jan.	2.15	2.25	2.60	2.90	3.45	3.45
Feb.	2.15	2.38	2.60	2.90	3.45	3.45
Mar.	2.15	2.50	2.60	2.90	3.45	3.45
Apr.	2.15	2.50	2.60	2.90	3.45	3.45
May	2.17	2.50	2.60	2.87	3.35	3.45
June	2.25	2.50	2.60	2.87	3.35	3.45
July	2.25	2.50	2.66	3.00	3.35	3.45
Aug.	2.25	2.50	2.90	3.45	3.35	3.45
Sept.	2.25	2.50	2.90	3.45	3.35	3.45
Oct.	2.25	2.50	2.90	3.45	3.35	3.45
Nov.	2.25	2.50	2.90	3.45	3.35	3.45
Dec.	2.25	2.58	2.90	3.45	3.38	3.70
Average	2.21	2.47	2.73	3.13	3.37	3.40
1951	3.70	3.70	3.95	4.15	4.30	4.65
Feb.	3.70	3.70	3.95	4.15	4.30	4.65
Mar.	3.70	3.70	3.95	4.15	4.30	4.65
Apr.	3.70	3.70	3.95	4.15	4.30	4.65
May	3.70	3.70	3.95	4.15	4.30	4.65
June	3.70	3.70	4.04	4.15	4.30	4.65
July	3.70	3.75	4.15	4.29	4.56	4.65
Aug.	3.70	3.95	4.15	4.30	4.65	4.905
Sept.	3.70	3.95	4.15	4.30	4.65	5.075
Oct.	3.70	3.95	4.15	4.30	4.65	5.075
Nov.	3.70	3.95	4.15	4.30	4.65	5.075
Dec.	3.70	3.95	4.15	4.30	4.65	5.075
Average	3.70	3.79	4.06	4.22	4.46	4.813

## COLD-FINISHED STEEL BARS

At Pittsburgh, Cents Per Pound

	1945	1946	1947	1948	1949	1950
Jan.	2.65	2.75	3.20	3.55	3.98	4.145
Feb.	2.65	2.93	3.20	3.55	3.98	4.145
Mar.	2.65	3.10	3.20	3.55	3.98	4.145
Apr.	2.65	3.10	3.20	3.55	3.98	4.145
May	2.65	3.10	3.20	3.50	3.98	4.145
June	2.65	3.10	3.20	3.50	3.98	4.145
July	2.65	3.10	3.27	3.62	3.98	4.145
Aug.	2.73	3.10	3.55	3.98	3.98	4.145
Sept.	2.75	3.10	3.55	3.98	3.98	4.145
Oct.	2.75	3.10	3.55	3.98	3.98	4.148
Nov.	2.75	3.10	3.55	3.98	3.98	4.15
Dec.	2.75	3.10	3.55	3.98	4.01	4.55
Average	2.69	3.06	3.35	3.74	3.98	4.179
1951	4.55	4.55	4.925	5.20	5.40	5.90
Feb.	4.55	4.55	4.925	5.20	5.40	6.25
Mar.	4.55	4.55	4.925	5.20	5.40	6.25
Apr.	4.55	4.55	4.925	5.20	5.40	6.25
May	4.55	4.55	4.925	5.20	5.40	6.25
June	4.55	4.55	5.041	5.20	5.40	6.25
July	4.55	4.625	5.20	5.39	5.77	6.25
Aug.	4.55	4.925	5.20	5.40	5.90	6.61
Sept.	4.55	4.925	5.20	5.40	5.90	6.85
Oct.	4.55	4.925	5.20	5.40	5.90	6.85
Nov.	4.55	4.925	5.20	5.40	5.90	6.85
Dec.	4.55	4.925	5.20	5.40	5.90	6.85
Average	4.55	4.712	5.072	5.30	5.63	6.48

## BUTTWELD STEEL PIPE

At Pittsburgh, Per Net Ton, Carload Lots

	1938*	1946	1947	1948	1949	1950
Jan.	\$71.00	\$83.00	\$79.00	\$86.00	\$103.00	\$108.00
Feb.	71.00	88.00	79.00	91.50	103.00	108.00
Mar.	71.00	69.00	79.00	95.00	103.00	108.00
Apr.	71.00	69.00	79.00	95.00	103.00	108.00
May	71.00	69.00	79.00	94.00	103.00	108.00
June	71.00	69.00	79.00	93.00	103.00	108.00
July	63.00	69.00	79.00	95.00	103.00	108.00
Aug.	63.00	69.00	88.00	103.00	103.00	108.00
Sept.	63.00	69.00	88.00	103.00	103.00	108.00
Oct.	63.00	69.00	88.00	103.00	103.00	108.00
Nov.	63.00	69.00	88.00	103.00	103.00	108.00
Dec.	63.00	71.00	88.00	103.00	103.00	117.00
Average	67.00	68.42	82.75	97.21	103.17	108.75
1951	\$117.00	\$117.00	\$124.00	\$136.50	\$141.50	\$152.00
Feb.	117.00	117.00	124.00	136.50	141.50	152.00
Mar.	117.00	117.00	124.00	136.50	141.50	152.00
Apr.	117.00	117.00	125.88	136.50	141.50	152.00
May	117.00	117.00	132.75	136.50	141.50	152.00
June	117.00	118.75	136.50	141.18	151.75	152.00
July	117.00	124.00	136.50	141.50	154.00	159.20
Aug.	117.00	124.00	136.50	141.50	154.00	164.00
Sept.	117.00	124.00	136.50	141.50	154.00	164.00
Oct.	117.00	124.00	136.50	141.50	154.00	164.00
Nov.	117.00	124.00	136.50	141.50	154.00	164.00
Dec.	117.00	124.00	136.50	141.50	154.00	164.00
Average	117.00	120.06	131.14	138.97	147.56	156.60

\* 1939-1945—\$63.00.

Computed from list discounts, for carload lots; 1-in. size, Standard, T. & C.

## MANUFACTURER'S BRIGHT WIRE

At Pittsburgh, Cents Per Pound

	1945	1946	1947	1948	1949	1950
Jan.	2.60	2.75	3.30	3.55	4.33	4.50
Feb.	2.60	2.90	3.30	3.55	4.33	4.50
Mar.	2.60	3.05	3.30	3.55	4.22	4.50
Apr.	2.60	3.05	3.30	3.55	4.15	4.50
May	2.63	3.05	3.30	3.60	4.15	4.50
June	2.75	3.05	3.30	3.60	4.15	4.50
July	2.75	3.05	3.35	3.77	4.15	4.50
Aug.	2.75	3.05	3.55	4.33	4.15	4.50
Sept.	2.75	3.05	3.55	4.33	4.15	4.50
Oct.	2.75	3.05	3.55	4.33	4.15	4.50
Nov.	2.75	3.05	3.55	4.33	4.15	4.50
Dec.	2.75	3.10	3.55	4.33	4.29	4.85
Average	2.69	3.02	3.41	3.90	4.20	4.53
1951	4.85	4.85	5.225	5.525	5.75	6.25
Feb.	4.85	4.85	5.225	5.525	5.75	6.60
Mar.	4.85	4.85	5.225	5.525	5.75	6.60
Apr.	4.85	4.85	5.225	5.525	5.75	6.60
May	4.85	4.85	5.225	5.525	5.75	6.60
June	4.85	4.85	5.352	5.525	5.75	6.60
July	4.85	4.925	5.525	5.735	6.125	6.60
Aug.	4.85	5.225	5.525	5.75	6.25	6.96
Sept.	4.85	5.225	5.525	5.75	6.25	7.20
Oct.	4.85	5.225	5.525	5.75	6.25	7.20
Nov.	4.85	5.225	5.525	5.75	6.25	7.20
Dec.	4.85	5.225	5.525	5.75	6.25	7.20
Average	4.85	5.012	5.386	5.636	5.889	6.80

## STRUCTURAL STEEL SHAPES

At Pittsburgh, Cents Per Pound

	1938*	1946*	1947	1948	1949	1950
Jan.	2.25	2.10	2.50	2.80	3.25	3.40
Feb.	2.25	2.23	2.50	2.80	3.25	3.40
Mar.	2.25	2.35	2.50	2.80	3.25	3.40
Apr.	2.25	2.35	2.50	2.80	3.25	3.40
May	2.25	2.35	2.50	2.75	3.25	3.40
June	2.22	2.35	2.50	2.75	3.25	3.40
July	2.10	2.35	2.56	2.95	3.25	3.40
Aug.	2.10	2.35	2.80	3.25	3.25	3.40
Sept.	2.10	2.35	2.80	3.25	3.25	3.40
Oct.	2.10	2.35	2.80	3.25	3.25	3.40
Nov.	2.10	2.35	2.80	3.25	3.25	3.40
Dec.	2.10	2.35	2.80	3.25	3.31	3.65
Average	2.17	2.32	2.63	3.00	3.26	3.42
1951	3.65	3.65	3.85	4.10	4.25	4.60
Feb.	3.65	3.65	3.85	4.10	4.25	4.60
Mar.	3.65	3.65	3.85	4.10	4.25	4.60
Apr.	3.65	3.65	3.85	4.10	4.25	4.60
May	3.65	3.65	3.85	4.10	4.25	4.60
June	3.65	3.65	3.96	4.10	4.25	4.60
July	3.65	3.69	4.10	4.24	4.51	4.60
Aug.	3.65	3.85	4.10	4.25	4.60	4.64
Sept.	3.65	3.85	4.10	4.25	4.60	5.00
Oct.	3.65	3.85	4.10	4.25	4.60	5.00
Nov.	3.65	3.85	4.10	4.25	4.60	5.00
Dec.	3.65	3.85	4.10	4.25	4.60	5.00
Average	3.65	3.74	3.99	4.17	4.41	4.75

\* 1939-1945—2.10¢.

## CAST IRON WATER PIPE

At New York, Net Ton, 6-in. and Larger

	1939*	1946*	1947	1948	1949	1950
Jan.	\$49.00	\$57.20	\$73.60	\$89.18	\$105.95	\$94.85
Feb.	49.00	57.20	73.75	89.18	105.95	92.36
Mar.	49.00	60.20	76.80	89.18	105.95	91.50
Apr.	49.00	62.20	79.80	89.18	103.98	91.50
May	49.00	62.20	79.80	92.34	94.95	91.50
June	49.00	62.20	79.80	95.50	94.95	91.50
July	49.00	69.60	80.50	95.50	94.95	91.50
Aug.	49.00	69.60	83.30	103.98	94.95	91.50
Sept.	49.00	69.60	83.30	105.95	94.95	91.50
Oct.	52.20	69.60	83.96	105.95	94.95	95.00
Nov.	52.20	69.60	84.18	105.95	94.95	95.00
Dec.	52.20	73.60	84.18	105.95	94.94	96.00
Average	49.80	65.23	80.25	97.31	98.45	92.88
1951	\$105.00	\$109.00	\$114.00	\$115.50	\$118.90	\$121.50
Feb.	109.00	109.00	114.00	115.50	118.90	121.50
Mar.	109.00	109.00	114.00	115.50	118.90	121.50
Apr.	109.00	109.00	114.00	115.50	118.90	123.50
May	109.00	109.00	114.00	115.50	116.50	123.70
June	109.00	109.00	114.00	115.50	116.50	125.60
July	109.00	109.00	114.00	115.50	116.50	125.60
Aug.	109.00	109.00	115.50	115.50	116.50	131.40
Sept.	109.00	111.50	115.50	115.50	121.50	131.40
Oct.	109.00	114.00	115.50	115.50	121.50	131.40
Nov.	109.00	114.00	115.50	115.50	121.50	131.40
Dec.	109.00	114.00	115.50	115.50	121.50	131.40
Average	108.67	110.46	114.75	115.50	118.98	126.66

\* 1940-1945—\$52.20.

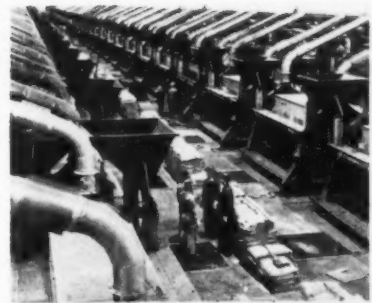
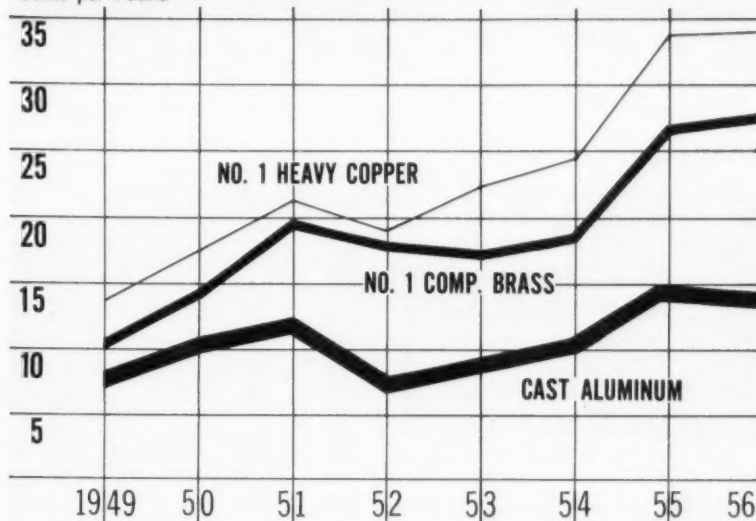
† U. S. Pipe and Foundry Index

## STEEL RAILS AT PITTSBURGH. No. 1 OH

Including Prices by Months and Yearly Averages in Dollars Per 100 lb\*

# NONFERROUS SCRAP PRICES

Cents per Pound



## Nonferrous Metal Powders

### ALUMINUM SCRAP, CAST

Cents Per Pound, f.o.b. New York\*

	1951	1952	1953	1954	1955	1956
Jan.	15.55	7.75	7.75	8.88	11.50	17.25
Feb.	15.50	7.75	8.63	8.50	12.94	17.25
Mar.	15.63	7.75	9.50	8.85	14.75	17.25
Apr.	16.88	7.75	9.13	10.25	14.63	16.88
May	17.25	7.75	8.25	11.00	12.85	14.05
June	17.25	7.25	9.20	10.00	12.00	11.50
July	8.15	7.25	10.00	10.00	14.38	12.50
Aug.	7.75	7.25	9.25	10.00	16.50	13.00
Sept.	7.75	7.25	9.00	10.75	17.10	13.50
Oct.	7.75	7.25	8.25	11.00	17.13	13.00
Nov.	7.75	7.75	9.63	11.00	17.13	11.75
Dec.	7.75	7.75	10.30	11.00	17.13	12.25
Average	12.08	7.51	9.07	10.10	14.84	14.18

\* Dealers' Buying Price.

### BRASS SCRAP, No. 1 COMPOSITION

Cents Per Pound, f.o.b. New York\*

	1951	1952	1953	1954	1955	1956
Jan.	17.25	18.25	17.75	16.44	21.31	31.50
Feb.	18.75	18.25	18.63	15.75	23.19	31.50
Mar.	20.50	18.25	19.10	17.00	24.10	33.60
Apr.	22.19	18.25	18.56	17.75	25.88	32.12
May	22.50	18.25	16.81	18.88	24.90	27.00
June	21.31	17.75	16.75	19.25	24.94	23.75
July	19.15	17.75	16.75	19.25	26.69	24.00
Aug.	18.50	17.75	15.44	19.25	28.81	25.50
Sept.	18.25	17.75	15.50	19.44	30.25	26.00
Oct.	18.25	17.74	16.06	20.03	29.31	25.75
Nov.	18.25	17.75	16.81	20.70	30.30	23.75
Dec.	18.25	17.75	17.35	21.00	31.75	24.00
Average	19.43	17.96	17.13	18.73	26.79	27.37

\* Dealers' Buying Price.

### No. 1 HEAVY COPPER SCRAP

Cents Per Pound, f.o.b. New York\*

	1951	1952	1953	1954	1955	1956
Jan.	19.75	19.00	19.00	22.63	27.00	41.00
Feb.	21.06	19.00	21.25	22.63	29.19	40.50
Mar.	23.88	19.00	25.70	23.50	30.15	43.40
Apr.	25.88	19.00	23.75	24.00	31.44	40.75
May	26.00	19.00	21.81	24.63	31.05	35.30
June	23.88	19.00	23.15	24.75	33.00	31.25
July	18.90	19.00	23.00	24.75	33.75	30.13
Aug.	19.00	19.00	21.25	24.75	35.63	32.13
Sept.	19.00	19.00	21.50	24.94	38.65	31.36
Oct.	19.00	19.00	22.13	25.63	36.69	29.25
Nov.	19.00	19.00	23.38	25.75	38.25	27.65
Dec.	19.00	19.00	23.55	26.63	41.00	27.75
Average	21.20	19.00	22.46	24.55	33.82	34.21

\* Dealers' Buying Price.

### BRASS INGOTS, 85-5-5-2

No. 115, Cents Per Pound, Cars\*

	1951	1952	1953	1954	1955	1956
Jan.	29.00	27.25	27.25	24.50	30.38	42.00
Feb.	29.00	27.25	27.81	23.75	32.81	42.00
Mar.	29.00	27.25	29.50	23.50	33.80	44.00
Apr.	29.00	27.25	28.00	25.75	37.00	43.50
May	29.00	27.25	26.00	26.50	35.30	40.80
June	29.00	27.25	26.00	27.00	34.50	36.25
July	29.00	27.25	25.63	27.00	36.50	35.50
Aug.	29.00	27.25	24.50	27.45	39.19	37.75
Sept.	27.69	27.25	24.50	28.13	42.50	37.75
Oct.	27.25	27.25	24.50	29.19	41.75	37.06
Nov.	27.25	27.25	24.50	29.50	41.75	35.00
Dec.	27.25	27.25	24.50	30.00	42.90	35.00
Average	28.45	27.25	26.06	26.66	37.29	39.70

\* Delivered.

### INGOT BRASS AND BRONZE

Short Tons of Shipments, Monthly

	1952	1953	1954	1955	1956
Jan.	28,315	24,423	20,661	25,201	27,736
Feb.	24,211	25,429	19,920	25,349	24,949
Mar.	28,890	28,256	23,653	29,713	28,310
Apr.	22,547	25,044	24,746	27,641	25,808
May	21,740	21,660	22,269	23,708	23,437
June	21,274	20,818	22,348	23,141	18,842
July	18,947	19,321	17,074	18,513	17,364
Aug.	21,807	20,156	21,684	27,013	23,812
Sept.	22,770	21,463	22,464	26,349	20,929
Oct.	28,611	22,820	24,680	25,228	23,045
Nov.	23,441	21,860	23,061	25,102	21,818
Dec.	22,983	20,541	21,273	21,448	20,500*
Total	277,736	271,251	263,233	296,406	276,550*

\* Estimate. Source: Brass & Bronze Ingot Institute.

### BRONZE INGOTS, 88-10-2

No. 245, Cents Per Pound, Cars\*

	1951	1952	1953	1954	1955	1956
Jan.	36.00	33.70	34.50	29.50	35.13	48.75
Feb.	36.00	34.50	34.88	28.75	37.56	48.75
Mar.	36.75	34.50	36.00	28.50	38.95	50.75
Apr.	37.00	34.50	33.56	31.94	42.25	50.25
May	37.00	34.50	30.25	32.75	40.55	46.80
June	37.00	34.50	30.25	33.25	39.75	42.25
July	37.00	34.50	30.06	33.25	41.75	41.50
Aug.	37.00	34.50	29.50	33.40	45.50	43.50
Sept.	34.38	34.50	29.50	33.69	48.75	43.50
Oct.	33.50	34.50	29.50	34.50	48.00	42.63
Nov.	33.50	34.50	29.50	34.75	48.00	40.00
Dec.	33.50	34.50	29.50	34.75	48.75	40.00
Average	35.72	34.43	31.42	32.42	42.91	44.89

\* Delivered.

### CADMIUM PRICES, STICKS, BARS

Dollars Per Pound, 1 to 5-Ton Lots

December 5, 1946 to February 19, 1947	\$1.50
February 20, 1947 to August 11, 1948	1.75
August 12, 1948 to November 17, 1948	1.90
November 18, 1948 to June 14, 1950	2.00
June 15, 1950 to September 10, 1950	2.15
September 11, 1950 to November 30, 1950	2.40
December 2, 1950 to May 26, 1952	2.55
May 27, 1952 to August 5, 1952	2.25
August 6, 1952 to November 30, 1952	2.00
December 1, 1952 to December 13, 1952	1.50-2.00
December 13, 1952 to January 24, 1953	1.75-2.00
January 26, 1953 to January 31, 1954	2.00
February 1, 1954 to December 31, 1956	1.70

### COBALT, 97 TO 99 PCT.

Per Pound, 500 to 550 lb Lots Since 1947

July 1, 1947 to March 31, 1949	\$1.65
April 1, 1949 to December 31, 1950	1.80
January 2, 1951 to October 1, 1951	2.10
October 1, 1951 to October 31, 1953	2.40
November 2, 1953 to December 31, 1956	2.60

### REMELT ALUMINUM INGOT

No. 12, Cents Per Pound, Cars\*

	1951	1952	1953	1954	1955	1956
Jan.	30.50	19.50	19.50	19.38	23.44	32.00
Feb.	30.25	19.50	20.25	18.66	25.98	30.63
Mar.	30.50	19.50	22.47	19.18	29.65	30.10
Apr.	30.75	19.50	22.75	20.75	29.38	30.25
May	30.75	19.50	22.28	20.38	26.70	27.00
June	30.75	19.50	22.70	19.50	26.00	24.83
July	19.50	19.90	22.59	19.50	26.69	25.19
Aug.	19.50	19.20	22.13	19.78	29.69	27.44
Sept.	19.50	19.50	21.83	20.19	30.35	27.25
Oct.	19.50	19.50	20.28	20.81	30.75	25.75
Nov.	19.50	19.50	20.34	20.88	31.00	24.07
Dec.	19.50	19.50	20.20	21.13	31.25	24.25
Average	25.05	19.42	21.44	20.00	28.41	27.38

\* Delivered.

# NONFERROUS

Prices: Straits tin, electrolytic copper, nickel, aluminum, antimony and U.S. primary aluminum production.

## STRAITS TIN, PROMPT PRICE

Cents Per Pound, at New York

	1941†	1946	1947	1948	1949	1950
Jan.	50.16	52.00	70.00	94.00	\$1.03	75.75
Feb.	51.41	52.00	70.00	94.00	\$1.03	74.80
Mar.	52.07	52.00	70.00	94.00	\$1.03	75.62
Apr.	52.03	52.00	80.00	94.00	\$1.03	76.38
May	52.18	52.00	80.00	94.00	\$1.03	77.50
June	52.68	52.00	80.00	\$1.03	\$1.03	77.70
July	53.41	52.00	80.00	\$1.03	\$1.03	89.88
Aug.	52.45	52.00	80.00	\$1.03	\$1.03	\$1.02
Sept.	52.00	52.00	80.00	\$1.03	\$1.02	\$1.01
Oct.	52.00	52.00	80.00	\$1.03	95.49	\$1.13
Nov.	52.00	61.00	80.00	\$1.03	90.11	\$1.38
Dec.	52.00	70.00	85.38	\$1.03	79.08	\$1.45
Average	52.03	54.00	77.95	99.25	99.22	95.53

	1951	1952	1953	1954	1955	1956
Jan.	\$1.72	\$1.097	\$1.215	84.83	87.28	104.82
Feb.	\$1.83	\$1.215	\$1.215	85.04	90.78	106.78
Mar.	\$1.45	\$1.215	\$1.214	91.88	91.04	100.67
Apr.	\$1.46	\$1.215	\$1.011	96.13	91.40	99.27
May	\$1.40	\$1.215	97.50	93.51	91.37	97.01
June	\$1.18	\$1.215	92.92	94.19	96.84	94.19
July	\$1.06	\$1.215	81.80	86.54	90.79	96.24
Aug.	\$1.03	\$1.212	80.71	83.39	95.38	99.08
Sept.	\$1.03	\$1.213	82.38	93.52	96.48	103.83
Oct.	\$1.03	\$1.212	81.86	93.05	96.21	106.87
Nov.	\$1.03	\$1.213	83.11	91.14	99.05	110.91
Dec.	\$1.03	\$1.215	84.61	88.57	108.00	108.00
Average	\$1.27	\$1.204	95.79	91.82	95.04	\$1.018

\* Tentative. † 1942-1945, incl.: 52.00.

## ANTIMONY, U. S. METAL

Cents Per Pound, F.O.B. Laredo, Tex.

	1951	1952	1953	1954	1955	1956
Jan.	34.50	50.00	34.50	28.50	28.50	33.50
Feb.	42.00	50.00	34.50	28.50	28.50	33.50
Mar.	42.00	50.00	34.50	28.50	28.50	33.50
Apr.	42.00	50.00	34.50	28.50	28.50	33.50
May	42.00	42.75	34.50	28.50	28.50	33.50
June	42.00	38.00	34.50	28.50	28.50	33.50
July	42.00	39.00	34.50	28.50	28.50	33.50
Aug.	42.00	38.00	34.50	28.50	29.75	33.50
Sept.	42.00	39.00	34.50	28.50	33.50	33.50
Oct.	42.00	39.00	34.50	28.50	33.50	33.50
Nov.	45.20	35.63	33.72	28.50	33.50	33.50
Dec.	50.00	34.50	28.50	28.50	33.50	33.50
Average	42.31	42.32	33.94	28.50	30.27	33.50

## MAGNESIUM, 99.8 PCT INGOT

Cents Per Pound, at Freeport, Tex.

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Jan.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Feb.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Mar.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Apr.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
May	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
June	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
July	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Aug.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Sept.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Oct.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Nov.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Dec.	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Average	48.00	34.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00

## ELECTROLYTIC COPPER

Cents Per Pound, Conn. Valley

	1940*	1946*	1947	1948	1949	1950
Jan.	12.22	12.00	19.56	21.50	23.50	18.50
Feb.	11.40	12.00	19.75	21.50	23.50	18.50
Mar.	11.38	12.00	21.50	21.50	23.49	18.50
Apr.	11.33	12.00	21.50	21.50	21.72	18.94
May	11.32	12.00	22.63	21.50	18.05	19.92
June	11.37	14.28	21.63	21.50	16.66	22.27
July	10.81	14.375	21.50	21.50	17.33	22.50
Aug.	10.95	14.375	21.50	23.43	17.63	22.54
Sept.	11.54	14.375	21.50	23.50	17.63	23.25
Oct.	12.00	14.375	21.50	23.50	17.63	24.50
Nov.	12.00	17.19	21.50	23.50	18.42	24.50
Dec.	12.00	19.50	21.50	23.50	18.50	24.50
Average	11.53	14.04	21.30	22.33	19.51	21.54

	1951	1952	1953	1954	1955	1956
Jan.	24.50	24.50	24.50	29.75	30.17	43.00
Feb.	24.50	24.50	25.41	29.75	33.00	44.026
Mar.	24.50	24.50	30.58	29.87	33.22	46.00
Apr.	24.50	24.50	30.70	29.87	36.00	46.00
May	24.50	24.50	29.85	30.00	36.00	46.00
June	24.50	24.50	29.88	30.00	36.00	46.00
July	24.50	24.50	29.88	30.00	36.00	41.68
Aug.	24.50	24.50	29.39	30.00	36.26	40.00
Sept.	24.50	24.50	29.50	30.00	43.00	40.00
Oct.	24.50	24.50	29.50	30.00	43.00	40.00
Nov.	24.50	24.50	29.75	30.00	43.00	36.00
Dec.	24.50	24.50	29.75	30.00	43.00	36.00
Average	24.50	24.50	29.07	29.95	37.55	42.00

\* 1941-1945 incl.: 12.00.

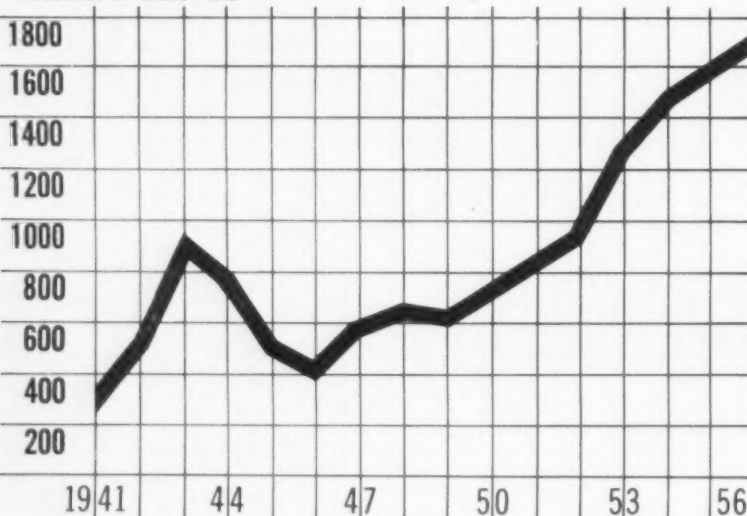
## U. S. PRODUCTION OF PRIMARY ALUMINUM (Short tons)

	1948	1949	1950	1951	1952	1953	1954	1955	1956
Jan.	48,767	53,356	52,023	67,954	76,934	89,895	116,247	126,203	140,384
Feb.	45,699	49,749	50,443	62,740	72,374	82,649	110,483	116,236	132,763
Mar.	51,874	54,852	58,747	70,022	77,069	104,920	122,339	130,272	145,895
Apr.	53,277	54,076	58,024	67,701	76,880	102,071	120,431	126,394	144,726
May	55,450	56,909	61,929	67,720	80,804	105,477	125,144	131,128	150,800
June	48,557	54,184	60,400	67,454	77,476	104,152	120,758	127,633	145,726
July	52,937	55,777	63,518	72,698	78,368	109,285	126,162	132,667	151,624
Aug.	54,953	52,005	63,006	73,816	85,175	110,545	125,296	133,581	152,406
Sept.	53,255	49,742	59,449	69,429	76,882	109,333	120,332	130,606	132,316
Oct.	54,526	45,790	62,916	72,647	77,312	108,219	125,089	134,656	149,125
Nov.	50,714	35,865	62,276	72,248	74,639	105,637	121,252	133,689	145,081
Dec.	53,474	41,161	65,897	72,454	83,409	110,291	127,035	140,746	150,000*
Total	623,483	603,462	718,622	836,881	937,321	1,252,015	1,458,500	1,565,783	1,680,856*

\* Estimate. Source: U. S. Bureau of Mines and Aluminum Association.

## U. S. ALUMINUM PRODUCTION

Thousands of Short Tons



## PRIMARY METAL

## ALUMINUM 99 PCT INGOT

Cents Per Pound, Freight Allowed

	1939	1940	1941*	1948*	1949	1950</
--	------	------	-------	-------	------	--------



Prices: Lead, zinc . . . U. S. primary  
magnesium production . . . Metal  
powder prices including iron, zinc,  
copper.

## METAL POWDERS

### LEAD PRICE, COMMON GRADE

Cents Per Pound, at St. Louis

	1940	1941†	1942†	1947	1948	1949	1950
Jan.	5.47	5.50	6.50	13.00	15.00	21.50	12.00
Feb.	5.08	5.50	6.50	13.25	15.00	21.50	12.00
Mar.	5.19	5.77	6.50	15.00	15.00	18.98	10.96
Apr.	5.07	5.85	6.50	15.00	17.21	15.18	10.63
May	5.02	5.85	6.50	15.00	17.50	13.72	11.71
June	5.00	5.85	6.18	15.00	17.50	12.00	11.82
July	5.00	5.85	9.18	15.00	17.80	13.56	11.66
Aug.	4.85	5.85	8.25	15.00	19.50	14.99	12.93
Sept.	4.93	5.85	8.25	15.00	19.50	15.05	15.80
Oct.	5.31	5.85	8.25	15.00	19.50	13.42	16.00
Nov.	5.73	5.85	10.41	15.00	21.50	12.52	17.00
Dec.	5.53	5.85	12.20	15.00	21.50	12.00	17.00
Average	5.18	5.79	8.10	14.69	18.04	15.37	13.29

	1951	1952	1953	1954	1955	1956
Jan.	17.00	19.00	14.19	13.26	15.00	15.95
Feb.	17.00	19.00	13.50	12.82	15.00	15.80
Mar.	17.00	19.00	13.40	12.94	15.00	15.80
Apr.	17.00	18.91	12.64	13.91	15.00	15.80
May	17.00	15.73	12.74	14.00	15.00	15.80
June	17.00	15.08	13.41	14.11	15.00	15.80

	1951	1952	1953	1954	1955	1956
July	17.00	16.00	13.68	14.00	14.90	15.80
Aug.	17.00	16.00	14.00	14.08	14.80	15.80
Sept.	17.00	16.00	13.74	14.60	14.94	15.80
Oct.	18.93	14.40	13.50	14.98	15.30	15.80
Nov.	19.00	14.18	13.50	15.00	15.30	15.80
Dec.	19.00	14.13	13.50	15.00	15.30	15.80*
Average	17.49	16.45	13.48	14.06	15.05	15.81*

† 1942-1945 incl.: 6.50.

\* Tentative.

### AVERAGE COPPER POWDER PRICE

Cents per lb. F.O.B. Mill—100 Mesh

	Electrolytic	Reduced
1951 Average	35.17	34.50
1952 Average	35.28	34.50
1953 Average	41.49	41.14
1954 Average	43.50	43.50
1955 Average	53.37	53.37
1956 Average	60.50	60.50

### AVERAGE ZINC POWDER PRICE

Cents per lb. F.O.B. Mill—100 Mesh

1950 Average	20.50 to 23.85
1951 Average	22.54 to 29.25
1952 Average	23.0 to 30.5
1953 Average	17.36 to 24.86
1954 Average	17.50 to 25.00
1955 Average	18.50 to 32.25
1956 Average	18.75 to 32.50

### IMPORTS OF IRON POWDER

Net Tons	
1949	3,108
1950	7,607
1951	12,850
1952	5,627
1953	6,964
1954	9,835
1955	10,986
1956	8,674*

\* Estimate.

### COPPER POWDER SHIPMENTS

Net Ton	Bearings and Parts	Friction Materials	Graphite Metal Brushes	Miscellaneous
1946	7,380	5,900	560	590
1947	8,730	7,170	615	385
1948	6,530	6,560	875	575
1949	7,014	4,374	1,158	450
1950	13,109	9,488	1,271	957
1951	13,671	11,013	963	390
1952	8,979	6,731	1,081	262
1953	11,515	9,281	859	430
1954	9,675	7,450	770	945
1955	11,980	8,065	1,490	900
1956	10,708*	7,259*	1,341*	810*

\* Estimate.

### IRON POWDER, AVERAGE MONTHLY PRICES

Cents Per Pound, F.O.B. Mill Unless Otherwise Specified

	Swedish Sponge, Riverton, N. J., Ocean Bags, —100 Mesh	Domestic Sponge, 98+ Pct Fe, Carload Lots, —100 Mesh	Electrolytic, Annealed, 99.5+ Pct Fe, —100 Mesh	Electrolytic, Unannealed, —325 Mesh 99+ Pct Fe	Hydrogen Reduced, —300 Mesh 98+ Pct Fe	Carbonyl, 5-10 Microns, 98=99.8+ Pct Fe
1951 Aver.	7.4 to 9.0	12.65 to 16.16	43.45	51.48	63.0 to 80.0	80.64 to 146.0
1952 Aver.	8.57 to 9.79	15.5 to 17.0	43.1	56.2	63.0 to 80.0	83.0 to 146.0
1953 Aver.	11.5	16.98	44.0	60.00	63.0 to 80.0	83.0 to 146.0
1954 Aver.	11.25	18.35	40.73	56.48	63.0 to 80.0	83.0 to 146.0
1955 Aver.	10.37	9.5	38.5	56.2	55.0 to 85.0	86.0 to 155.0
1956 Aver.	8.90	9.5	36.5	57.0	80	86.0 to 155.0

### U. S. PRODUCTION OF PRIMARY MAGNESIUM

Short Tons, Excludes Crystal Equivalent of Mg Content of Fire Bombs in 1943, 1944

Month	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
January	3,816	98	1,398	883	988	1,002	1,978	7,425	9,908	6,446	5,089	6,337
February	2,956	48	1,232	830	884	913	1,709	7,794	9,078	6,886	4,848	5,908
March	3,297	10	1,472	887	988	948	1,885	8,093	10,352	6,545	4,942	6,347
April	3,171		1,153	801	856	957	2,043	8,800	9,751	6,203	1,899	6,081
May	3,171		926	797	967	972	2,194	9,093	9,116	6,480	4,277	6,359
June	3,404	241	848	766	950	1,175	2,512	8,670	7,286	6,180	4,757	6,098
July	4,586	692	905	792	985	1,132	2,998	5,529	6,507	6,049	5,112	1,138
August	4,500	889	849	809	970	1,400	3,418	9,771	6,265	5,771	5,880	3,314
September	2,063	986	886	819	974	1,635	4,166	8,422	6,078	5,325	5,923	6,128
October	1,017	1,000	912	873	941	1,690	5,147	8,980	6,341	5,149	6,286	6,735
November	715	558	670	814	989	1,760	6,043	9,123	6,227	4,942	6,130	6,880*
December	101	795	893	932	1,004	1,942	8,923	9,323	6,467	4,788	6,230	6,897*
Total	32,792	5,317	12,344	10,003	11,598	15,726	40,914	105,833	93,075	69,724	61,131	68,200*

Producers' reports to WPB, Jan. 1942 to Aug. 1945, thereafter to Bureau of Mines and Magnesium Assn.

\* Estimate.

### SHIPMENTS OF IRON POWDER

Total Net Tons, Four Major Classes\*

	Total	Bearings and Parts	Friction Materials	Electronic & Magnetic Application	Miscellaneous
1945	1,950				
1946	2,485	1,350	30	415	600
1947	3,115	1,560	30	600	845
1948	3,520	1,685	25	990	820
1949	3,235	1,746	14	935	540
1950	3,942	1,570	23	1,611	738
1951	3,651	2,150	1.5	900	600
1952	4,018	2,109	1.0	336	1,602
1953	6,255	3,457	14.4	1,599	1,189
1954	7,835	3,445	73.0	905	3,410
1955	20,724	9,990	99.5	1,097.5	9,537
1956	31,962†	17,830†	108.0†	1,694†	22,330†

\* Domestic.

† Estimates.

### PRIME WESTERN ZINC PRICE Cents Per Pound, at E. St. Louis

	1940	1941†	1946†	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Jan.	6.03	7.65	8.85	11.005	11.69	18.18	9.48	18.22	20.29	13.43	10.26	12.00	13.44
Feb.	5.93	7.65	8.85	11.005	12.61	18.20	10.47	18.22	20.29	12.31	9.88	12.00	13.50
Mar.	6.14	7.65	8.85	11.005	12.61	17.76	10.86	18.22	20.29	11.83	10.75	12.43	13.50
Apr.	6.14	7.65	8.85	11.005	12.61	14.76	11.41	18.25	20.29	11.83	10.79	12.50	13.50
May	6.14	7.65	8.85	11.005	12.61	14.76	11.41	18.25	20.29	11.83	10.79	12.50	13.50
June	6.63	7.65	8.85	11.005	12.65	10.27	15.49	18.26	18.57	11.83	11.48	12.75	13.50
July	6.54	7.65	8.89	11.005	13.09	10.06	15.72	18.25	15.83	11.67	11.50	13.00	13.50
Aug.	6.79	7.65	8.89	11.005	15.65	10.70	15.72	18.26	14.88	11.53	11.50	13.00	13.50
Sept.	7.33	7.65	8.89	11.005	15.65	10.77	17.82	18.29	14.88	11.66	11.98	13.40	13.50
Oct.	7.65	8.36	9.28	11.03	15.74	10.74	18.22	20.22	14.08	10.90	12.00	13.50	13.50
Nov.	7.64	8.65	10.96	11.06	17.27	10.46	18.22	20.29	13.33	10.50	12.00	13.50	13.50
Dec.	7.65	8.65	10.94	11.06	18.15	10.47	18.22	20.29	13.33	10.50	12.00	13.50	13.50
Average	6.73	7.20	9.59	11.02	14.20	12.85	14.51	18.75	17.03	11.54	11.19	12.79	13.48

† 1942-1945, incl.: 8.65.

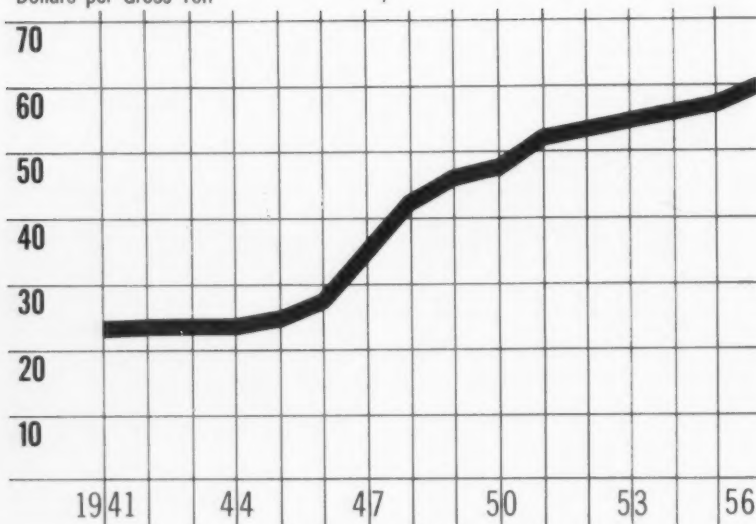


# Pig Iron and Iron Ore

## PIG IRON PRICES

Dollars per Gross Ton

The Iron Age Composite



### COMPOSITE PIG IRON PRICE

Average of THE IRON AGE quotations on basic pig iron at Valley furnaces and foundry iron at Chicago, Birmingham, Buffalo, Valley and Philadelphia, in gross tons.

	1936	1937	1938	1939	1940	1941*		1945*	1946	1947	1948	1949	1950		1951	1952	1953	1954	1955	1956
Jan.	\$19.84	\$23.25	\$23.25	\$20.61	\$22.61	\$23.45	Jan.	\$23.61	\$25.37	\$30.14	\$39.83	\$46.79	\$45.98	Jan.	\$52.69	\$52.72	\$55.26	\$56.59	\$56.59	\$59.09
Feb.	18.84	20.50	23.25	20.61	22.61	23.45	Feb.	24.11	25.37	30.15	40.27	46.74	46.38	Feb.	52.69	52.72	55.26	56.59	56.59	59.09
Mar.	18.84	22.85	23.25	20.61	22.61	23.53	Mar.	24.61	25.75	32.92	40.32	46.74	46.38	Mar.	52.69	52.72	55.26	56.59	56.59	59.25
Apr.	18.84	23.25	23.25	20.61	22.61	23.61	Apr.	24.61	26.12	33.15	40.11	46.64	46.38	Apr.	52.69	52.72	55.26	56.59	56.59	60.29
May	18.84	23.25	23.25	20.61	22.61	23.61	May	24.61	26.45	33.15	40.33	45.97	46.38	May	52.69	52.77	55.26	56.59	56.59	60.29
June	18.84	23.25	22.98	20.61	22.61	23.61	June	24.61	28.13	33.15	40.51	45.91	46.38	June	52.69	52.77	55.32	56.59	56.59	60.29
July	18.84	23.25	19.61	20.61	22.61	23.61	July	24.61	28.13	34.52	42.25	45.91	46.38	July	52.69	53.27	56.73	56.59	58.46	60.33
Aug.	18.73	23.25	19.61	20.61	22.61	23.61	Aug.	24.61	28.13	36.84	44.34	45.91	46.56	Aug.	52.69	55.26	56.76	56.59	59.09	63.02
Sept.	18.73	23.25	19.82	21.61	22.61	23.61	Sept.	24.61	28.13	36.95	44.96	45.90	47.16	Sept.	52.69	55.26	56.86	56.59	59.09	63.04
Oct.	18.73	23.25	20.57	22.61	22.61	23.61	Oct.	24.91	28.13	36.95	46.63	45.88	49.29	Oct.	52.72	55.26	56.59	56.59	59.09	63.04
Nov.	18.98	23.25	20.61	22.61	22.61	23.61	Nov.	25.37	28.13	37.04	48.84	45.88	49.69	Nov.	52.72	55.26	56.59	56.59	59.09	63.04
Dec.	19.73	23.25	20.61	22.61	22.65	23.61	Dec.	25.37	29.64	37.24	48.91	45.88	52.50	Dec.	52.72	55.26	56.59	56.59	59.09	63.04
Average	18.90	22.74	21.67	21.19	22.64	23.58	Average	24.81	27.29	34.35	42.94	46.18	47.85	Average	52.70	53.83	55.96	56.59	57.78	61.15

\* Price unchanged at \$23.61 from 1942 through 1944.

### PRODUCTION OF PIG IRON AND FERROALLOYS, Net Tons

Year	PIG IRON						FERROALLOYS*			
	Basic	Bessemer	Low Phosphorus	Foundry	Malleable	Forge	Ferromang. and Spiegeleisen	Ferro-silicon and Silvery Pig Iron	All Other Ferroalloys	Total Ferroalloys
1956†										2,396,000
1955	62,484,889	7,436,354	263,036	2,754,641	3,531,420	.....	955,174	803,281	647,993	2,406,448
1954	47,023,175	5,652,503	211,893	2,273,032	2,629,662	.....	749,413	636,694	454,587	1,840,694
1953	59,882,512	8,110,881	297,065	2,500,986	3,784,458	.....	1,007,248	772,339	569,152	2,346,739
1952	47,511,169	7,445,715	307,478	2,670,210	3,120,168	.....	820,808	749,059	471,150	2,041,017
1951	54,212,509	9,045,954	314,725	3,050,626	3,363,369	.....	865,805	919,085	389,375	2,174,265
1950	49,680,440	8,090,698	335,416	2,806,247	3,101,043	.....	776,881	839,667	196,956	1,813,404
1949	40,905,356	7,059,416	301,520	2,503,912	2,409,436	.....	675,029	667,322	161,872	1,504,243
1948	46,315,064	7,731,530	384,425	2,769,510	2,590,656	.....	805,013	842,385	208,945	1,856,343
1947	44,804,743	7,182,207	331,118	2,953,405	2,874,732	.....	800,725	802,976	184,706	1,788,407
1946	33,727,655	5,932,414	167,013	2,545,936	2,190,285	.....	540,061	724,141	156,825	1,421,030
1945	39,866,982	8,255,513	314,063	2,248,887	2,350,076	.....	706,078	817,849	171,933	1,695,860
1944	45,896,008	9,756,836	474,686	2,190,681	2,494,659	.....	809,638	837,944	211,177	1,858,759
1943	45,374,662	10,258,788	538,832	2,059,501	2,393,241	.....	803,623	823,450	232,204	1,989,277
1942	43,532,865	9,865,220	562,672	2,546,530	2,399,520	.....	785,103	880,643	161,414	1,827,360

\* Including ferroalloys produced in electric furnaces.

† Iron Age estimate.

Source: American Iron and Steel Institute.

### CANADIAN BLAST FURNACE PRODUCTION, Net Tons Including Ferroalloys

Year	Pig Iron	Ferroalloys	Total	Year	Pig Iron	Ferroalloys	Total	Year	Pig Iron	Ferroalloys	Total
1933	254,592	33,737	288,329	1941	1,528,054	213,218	1,741,272	1949	2,154,352	211,603	2,365,955
1934	455,789	37,055	492,844	1942	1,975,015	213,636	2,188,651	1950	2,309,732	181,575	2,491,307
1935	678,302	61,182	740,484	1943	1,758,269	197,094	1,955,363	1951	2,552,696	250,930	2,803,626
1936	759,618	87,679	847,297	1944	1,852,628	171,323	2,023,951	1952	2,682,085	232,036	2,914,101
1937	1,006,717	91,931	1,098,648	1945	1,777,958	186,978	1,964,936	1953	3,012,269	150,595	3,162,864
1938	789,710	59,720	849,430	1946	1,403,758	116,995	1,520,753	1954	2,213,433	109,833	2,323,266
1939	846,418	85,531	931,949	1947	1,969,847	149,832	2,119,679	1955	3,213,764	166,682	3,380,446
1940	1,309,161	151,661	1,460,822	1948	2,120,909	250,659	2,371,568	1956*	3,616,000	245,000	3,861,000

\* Estimated.

Source: Dominion Bureau of Statistics.

# PIG IRON

Prices: Foundry iron at Buffalo, Chicago, Granite City, Valley and Birmingham . . . basic iron Valley . . . Valley malleable.

## CHICAGO FOUNDRY PIG IRON

Per Gross Ton, at Furnace						
	1945	1946	1947	1948	1949	1950
Jan.	\$24.00	\$25.75	\$30.50	\$38.75	\$46.50	\$46.50
Feb.	24.50	25.75	30.50	39.00	46.50	46.50
Mar.	25.00	26.13	33.00	39.00	46.50	46.50
Apr.	25.00	26.50	33.00	39.00	46.50	46.50
May	25.00	26.50	33.00	39.00	46.50	46.50
June	25.00	26.50	33.00	39.00	46.50	46.50
July	25.00	28.50	34.20	42.00	46.50	46.50
Aug.	23.00	28.50	36.00	39.00	46.50	46.50
Sept.	25.00	28.50	36.00	43.00	46.50	47.50
Oct.	25.30	28.50	36.00	46.50	46.50	49.50
Nov.	25.75	28.50	36.00	46.50	46.50	49.50
Dec.	25.75	30.10	36.40	46.50	46.50	52.50
Average	25.02	27.64	34.80	41.77	46.50	47.58
1951 1952 1953 1954 1955 1956						
Jan.	\$52.50	\$52.50	\$55.00	\$56.50	\$56.50	\$59.00
Feb.	52.50	52.50	55.00	56.50	56.50	59.00
Mar.	52.50	52.50	55.00	56.50	56.50	59.00
Apr.	52.50	52.50	55.00	56.50	56.50	60.50
May	52.50	52.50	55.00	56.50	56.50	60.50
June	52.50	52.50	55.00	56.50	56.50	60.50
July	52.50	53.00	56.50	56.50	58.37	60.50
Aug.	52.50	55.00	56.50	56.50	59.00	61.13
Sept.	52.50	55.00	56.50	56.50	59.00	63.00
Oct.	52.50	55.00	56.50	56.50	59.00	63.00
Nov.	52.50	55.00	56.50	56.50	59.00	63.00
Dec.	52.50	55.00	56.50	56.50	59.00	63.00
Average	52.50	53.75	55.75	56.50	57.69	61.01

## BUFFALO FOUNDRY PIG IRON

Per Gross Ton, at Furnace						
	1945	1946	1947	1948	1949	1950
Jan.	\$24.00	\$25.75	\$30.50	\$40.37	\$47.28	\$46.50
Feb.	24.50	25.75	30.50	42.12	47.00	46.50
Mar.	25.00	26.13	32.38	42.45	47.00	46.50
Apr.	25.00	26.50	33.00	41.49	46.75	46.50
May	25.00	26.50	33.00	41.37	46.50	46.50
June	25.00	26.50	33.00	41.44	46.50	46.50
July	25.00	28.50	34.20	42.08	46.50	46.50
Aug.	25.00	28.50	37.17	44.90	46.50	46.50
Sept.	25.00	28.50	37.18	45.87	46.50	47.25
Oct.	25.30	28.50	37.00	47.12	46.50	49.50
Nov.	25.75	28.50	37.75	47.50	46.50	49.50
Dec.	25.75	30.10	38.00	47.50	46.50	52.50
Average	25.02	27.64	34.49	43.65	46.67	47.56
1951 1952 1953 1954 1955 1956						
Jan.	\$52.50	\$52.50	\$55.00	\$56.50	\$56.50	\$59.00
Feb.	52.50	52.50	55.00	56.50	56.50	59.00
Mar.	52.50	52.50	55.00	56.50	56.50	59.00
Apr.	52.50	52.50	55.00	56.50	56.50	60.50
May	52.50	52.50	55.00	56.50	56.50	60.50
June	52.50	52.50	55.00	56.50	56.50	60.50
July	52.50	53.00	56.50	56.50	58.37	60.50
Aug.	52.50	55.00	56.50	56.50	59.00	62.00
Sept.	52.50	55.00	56.50	56.50	59.00	63.00
Oct.	52.50	55.00	56.50	56.50	59.00	63.00
Nov.	52.50	55.00	56.50	56.50	59.00	63.00
Dec.	52.50	55.00	56.50	56.50	59.00	63.00
Average	52.50	53.75	55.75	56.50	57.69	61.08

## FOUNDRY PIG IRON PRICES

Mahoning, Shenango Valley, Per Gross Ton						
	1940*	1945*	1946	1947	1948†	1950
Jan.	\$23.00	\$24.00	\$25.75	\$30.50	\$38.37	\$46.50
Feb.	23.00	24.50	25.75	30.50	39.50	46.50
Mar.	23.00	25.00	26.13	33.50	39.50	46.50
Apr.	23.00	25.00	26.50	33.50	39.50	46.50
May	23.00	25.00	26.50	33.50	39.50	46.50
June	23.00	25.00	26.50	33.50	39.50	46.50
July	23.00	25.00	28.50	34.70	42.50	46.50
Aug.	23.00	25.00	28.50	36.50	43.50	46.50
Sept.	23.00	25.00	28.50	36.50	43.50	47.50
Oct.	23.00	25.30	28.50	36.50	46.12	49.50
Nov.	23.00	25.75	28.50	36.50	46.50	49.50
Dec.	23.40	25.75	30.10	36.70	46.50	52.12
Average	23.03	25.02	27.64	34.38	42.12	47.55
1951 1952 1953 1954 1955 1956						
Jan.	\$52.50	\$52.50	\$55.00	\$56.50	\$56.50	\$59.00
Feb.	52.50	52.50	55.00	56.50	56.50	59.00
Mar.	52.50	52.50	55.00	56.50	56.50	59.00
Apr.	52.50	52.50	55.00	56.50	56.50	60.50
May	52.50	52.50	55.00	56.50	56.50	60.50
June	52.50	52.50	55.00	56.50	56.50	60.50
July	52.50	53.00	56.50	56.50	58.37	60.50
Aug.	52.50	55.00	56.50	56.50	59.00	63.00
Sept.	52.50	55.00	56.50	56.50	59.00	63.00
Oct.	52.50	55.00	56.50	56.50	59.00	63.00
Nov.	52.50	55.00	56.50	56.50	59.00	63.00
Dec.	52.50	55.00	56.50	56.50	59.00	63.00
Average	52.50	53.75	55.75	56.50	57.69	61.17

\* Price unchanged at \$24.00 from 1941 through 1944.  
† Price unchanged at \$46.50 through 1949.

## GRANITE CITY, ILL., PIG IRON

Foundry, Gross Ton, at Furnace						
	1945*	1946	1947	1948	1949	1950
Jan.	\$24.00	\$25.75	\$30.50	\$39.25	\$48.40	\$48.40
Feb.	24.50	25.75	30.50	40.00	48.40	48.40
Mar.	25.00	26.13	32.00	40.00	48.40	48.40
Apr.	25.00	26.50	33.50	40.00	48.40	48.40
May	25.00	26.50	33.50	41.43	48.40	48.40
June	25.00	26.50	33.50	45.75	48.40	48.40
July	25.00	28.50	34.60	45.75	48.40	48.40
Aug.	25.00	28.50	36.63	47.34	48.40	48.40
Sept.	25.00	28.50	37.00	48.40	48.40	48.40
Oct.	25.30	28.50	37.00	48.40	48.40	51.40
Nov.	25.75	28.50	37.00	48.40	48.40	51.40
Dec.	25.75	29.70	37.00	48.40	48.40	53.65
Average	25.02	27.44	34.39	44.42	48.40	49.34
1951 1952 1953 1954 1955 1956						
Jan.	\$54.40	\$54.40	\$56.90	\$58.40	\$58.40	\$60.90
Feb.	54.40	54.40	56.90	58.40	58.40	60.90
Mar.	54.40	54.40	56.90	58.40	58.40	60.90
Apr.	54.40	54.40	56.90	58.40	58.40	62.40
May	54.40	54.40	56.90	58.40	58.40	62.40
June	54.40	54.40	56.90	58.40	58.40	62.40
July	54.40	54.90	58.40	58.40	60.27	62.40
Aug.	54.40	56.90	58.40	58.40	60.90	64.90
Sept.	54.40	56.90	58.40	58.40	60.90	64.90
Oct.	54.40	56.90	58.40	58.40	60.90	64.90
Nov.	54.40	56.90	58.40	58.40	60.90	64.90
Dec.	54.40	56.90	58.40	58.40	60.90	64.90
Average	54.40	55.48	57.65	58.40	59.59	63.07

\* Price unchanged at \$24.00 from 1941 through 1944.

## BIRMINGHAM PIG IRON PRICES

Foundry Grade, Per Gross Ton						
	1945†	1946	1947	1948	1949	1950
Jan.	\$20.38	\$22.13	\$22.13	\$37.38	\$43.38	\$39.38
Feb.	20.86	22.13	26.88	37.38	43.38	42.38
Mar.	21.38	22.51	29.13	37.38	43.38	42.38
Apr.	21.38	22.88	29.88	37.38	43.38	42.38
May	21.38	22.88	29.88	38.38	39.71	42.38
June	21.38	24.88	29.88	39.38	39.38	42.38
July	21.38	24.88	31.28	31.04	39.38	42.38
Aug.	21.38	24.88	34.13	43.38	39.38	42.38
Sept.	21.38	24.88	34.88	43.38	39.38	42.67
Oct.	21.68	24.88	34.88	43.38	39.38	45.88
Nov.	22.13	24.88	34.88	43.38	39.38	45.88
Dec.	22.13	26.88	34.60	43.38	39.38	48.88
Average	21.40	24.06	31.43	40.43	40.74	43.53
1951 1952 1953 1954 1955 1956						
Jan.	\$48.88	\$48.88	\$51.38	\$52.88	\$52.88	\$55.00
Feb.	48.88	48.88	51.38	52.88	52.88	55.00
Mar.	48.88	48.88	51.38	52.88	52.88	55.00
Apr.	48.88	48.88	51.38	52.88	52.88	55.00
May	48.88	48.88	51.38	52.88	52.88	55.00
June	48.88	48.88	51.38	52.88	52.88	55.00
July	48.88	49.38	52.88	52.88	54.47	57.67
Aug.	48.88	51.38	52.88	52.88	55.00	58.65
Sept.	48.88	51.38	52.88	52.88	55.00	59.00
Oct.	48.88	51.38	52.88	52.88	55.00	59.00
Nov.	48.88	51.38	52.88	52.88	55.00	59.00
Dec.	48.88	51.38	52.88	52.88	55.00	59.00
Average	48.88	49.96	52.13	52.88	53.89	56.86

† Price unchanged at \$20.38 from 1942 through 1944.

## BASIC PIG IRON, VALLEY

Mahoning, Shenango Valley, Gross Ton						
	1940*	1945*	1946	1947	1948†	1950
Jan.	\$22.50	\$23.50	\$25.25	\$30.00	\$38.87	\$46.00
Feb.	22.50	24.00	25.25	30.00	39.00	46.00
Mar.	22.50	24.50	25.63	33.00	39.00	46.00
Apr.	22.50	24.50	26.00	33.00	39.00	46.00
May	22.50	24.50	26.00	33.00	39.00	46.00
June	22.50	24.50	26.00	33.00	39.00	46.00
July	22.50	24.50	28.00	34.20	42.00	46.00
Aug.	22.50	24.50	28.00	36.00	43.00	46.00
Sept.	22.50	24.50	28.00	36.00	43.00	46.75
Oct.	22.50	24.80	28.00	36.00	45.62	49.00
Nov.	22.50	25.25	28.00	36.00	46.00	49.00
Dec.	22.90	25.25	29.60	36.20	46.00	51.62
Average	22.53	24.52	27.14	34.78	41.62	47.03
	1951	1952	1953	1954	1955	1956
Jan.	\$52.00	\$52.00	\$44.50	\$56.00	\$56.00	\$58.50
Feb.	52.00	52.00	54.50	56.00	56.00	58.50
Mar.	52.00	52.00	54.50	56.00	56.00	58.50
Apr.	52.00	52.00	54.50	56.00	56.00	60.00
May	52.00	52.00	54.50	56.00	56.00	60.00
June	52.00	52.00	54.50	56.00	56.00	60.00
July	52.00	52.50	56.00	56.00	57.67	60.00
Aug.	52.00	54.50	56.00	56.00	58.67	62.50
Sept.	52.00	54.50	56.00	56.00	58.60	62.50
Oct.	52.00	54.50	56.00	56.00	58.30	62.50
Nov.	52.00	54.50	56.00	56.00	58.50	62.50
Dec.	52.00	54.50	56.00	56.00	58.50	62.50
Average	52.00	53.08	55.25	56.00	57.19	60.67

# IRON ORE

Prices: Lake Superior ore, foundry and furnace coke . . . Iron ore analyses, ore shipments and prices for various grades.

## LAKE SUPERIOR IRON ORES

Avg. Analyses, Combined Ranges, Grades

Year	Analyses, Pct				Moisture
	Iron, Natural	Phos.	Silica	Mang.	
1955	50.63	0.90	10.11	0.72	10.61
1954	50.86	0.95	10.22	0.70	10.47
1953	50.39	0.90	10.25	0.75	10.90
1952	50.49	0.111	10.05	0.77	10.78
1951	50.25	0.090	9.87	0.77	11.22
1950	50.38	0.092	9.85	0.77	11.11
1949	50.39	0.096	9.72	0.75	11.12
1948	50.49	0.093	9.30	0.76	11.35
1947	50.91	0.093	9.09	0.75	11.28
1946	51.32	0.087	8.83	0.74	11.22
1945	51.69	0.089	8.52	0.72	10.96
1944	51.72	0.088	8.42	0.74	11.02
1943	51.58	0.091	8.32	0.82	11.06
1942	51.65	0.089	8.21	0.79	10.96
1941	51.83	0.085	8.16	0.78	11.01
1940	52.00	0.085	8.00	0.77	10.93
1939	51.75	0.085	8.27	0.78	10.73

Source: Lake Superior Iron Ore Assn.

## SHIPMENTS OF IRON ORE

Lake Superior Shipments, Gross Tons

1938	19,353,000
1939	44,884,000
1940	63,308,000
1941	79,941,000
1942	92,070,000
1943	85,116,000
1944	81,039,000
1945	75,207,000
1946	56,875,000
1947	77,210,278
1948	82,655,757
1949	69,556,269
1950	78,205,592
1951	89,092,012
1952	74,910,798
1953	95,844,449
1954	60,793,697
1955	87,459,853
1956*	77,500,000

\* Estimate.

Source: Lake Superior Iron Ore Assn.

## U. S. IRON ORE CONSUMPTION

In Long Tons

1946	72,174,844
1947	96,115,549
1948	100,488,557
1949	91,123,220
1950	106,610,273
1951	114,837,112
1952	100,640,638
1953	122,124,861
1954	96,800,000
1955	114,889,833
1956*	123,000,000

\* Estimate by The Iron Age.

Source: U. S. Bureau of Mines.

## LAKE SUPERIOR IRON ORE PRICES

Per Gross Ton at Lower Lake Ports

### BESSEMER ORES

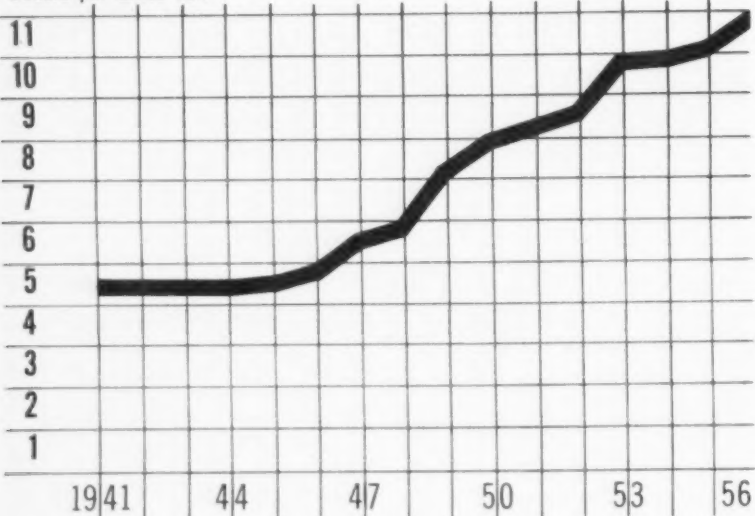
	Guarantee		Price	
	Iron Natural	Phosphorus Dry	Old Range	Mesabi
1937 to Apr. 15, 1940	51.50	0.045	5.25	5.10
1940 Apr. 16 on	51.50	0.045	4.75	4.60
1941 through 1944	51.50	0.045	4.75	4.60
1945 to June 24, 1946	51.50	0.045	4.95	4.70
1946 June 24 to Dec. 31	51.50	0.045	5.45	5.20
1947 to Apr. 1, 1948	51.50	0.045	5.95	5.70
1948 Apr. 1 on	51.50	0.045	6.60	6.35
1949	51.50	0.045	7.60	7.35
1950 Feb. 1 to Dec. 1	51.50	0.045	8.10	7.85
1950 Dec. 1 on	51.50	0.045	8.70	8.45
1951	51.50	0.045	8.70	8.45
1952 to July 25	51.50	0.045	8.70	8.45
1952 July 26 on	51.50	0.045	9.45	9.20
1953 to June 30	51.50	0.045	10.10	9.85
1953 July 1 on	51.50	0.045	10.30	10.05
1954	51.50	0.045	10.30	10.05
1955	51.50	0.045	10.40	10.25
1956	51.50	0.045	11.25	11.00

### NON-BESSEMER

	Guarantee		Price	
	Iron Natural	Old Range	Mesabi	High Phosphorus
1937 to Apr. 15, 1940	51.50	5.10	4.95	4.85
1940 Apr. 16 on	51.50	4.60	4.45	4.35
1941 through 1944	51.50	4.60	4.45	4.35
1945 to June 24, 1946	51.50	4.80	4.55	4.55
1946 June 24 to Dec. 31	51.50	5.30	5.05	5.05
1947 to Apr. 1, 1948	51.50	5.80	5.55	5.55
1948 Apr. 1 on	51.50	6.45	6.20	6.20
1949	51.50	7.45	7.20	7.20
1950 Feb. 1 to Dec. 1	51.50	7.95	7.70	7.70
1950 Dec. 1 on	51.50	8.55	8.30	8.30
1951	51.50	8.55	8.30	8.30
1952 to July 25	51.50	8.55	8.30	8.30
1952 July 26 on	51.50	9.30	9.05	9.05
1953 to June 30	51.50	9.95	9.70	9.70
1953 July 1 on	51.50	10.15	9.90	9.90
1954	51.50	10.15	9.90	9.90
1955	51.50	10.25	10.10	10.00
1956	51.50	11.10	10.85	10.85

## IRON ORE

Dollars per Gross Ton



## MESABI NON-BESSEMER

## CONNELLSVILLE FURNACE COKE

Net Ton at Oven, Monthly Review

	1945	1946	1947	1948	1949	1950
Jan.	\$7.00	\$7.50	\$8.75	\$12.50	\$16.50	\$14.00
Feb.	7.00	7.50	8.88	12.50	15.25	14.00
Mar.	7.00	7.50	9.00	12.50	14.50	14.13
Apr.	7.00	7.50	9.60	12.50	14.50	14.25
May	7.15	7.50	10.50	12.50	14.38	14.25
June	7.50	7.50	10.50	12.70	14.25	14.25
July	7.50	8.50	11.40	13.68	14.25	14.25
Aug.	7.50	8.75	12.00	14.75	14.25	14.25
Sept.	7.50	8.75	12.00	15.00	14.25	14.25
Oct.	7.50	8.75	12.38	15.00	14.25	14.25
Nov.	7.50	8.75	12.50	15.00	14.20	14.25
Dec.	7.50	8.75	12.50	15.00	14.00	14.25
Average	7.30	8.10	10.83	13.63	14.58	14.20

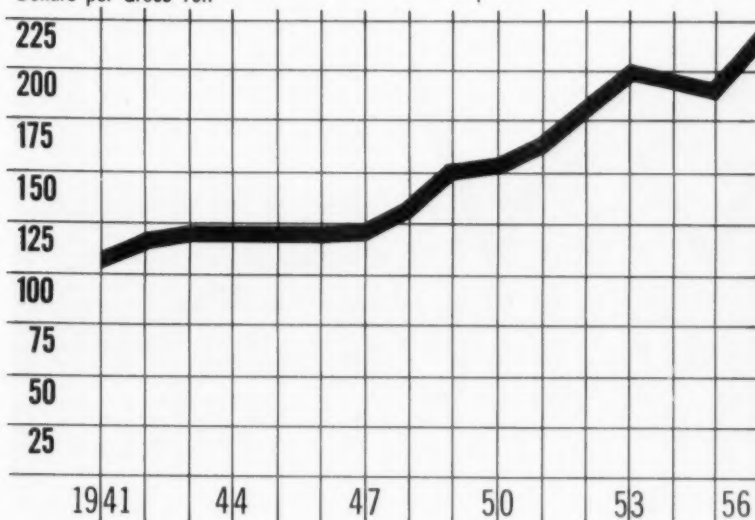
	1951	1952	1953	1954	1955	1956
Jan.	\$14.25	\$14.75	\$14.75	\$14.38	\$14.38	\$14.25
Feb.	14.25	14.75	14.75	14.38	14.38	14.25
Mar.	14.50	14.75	14.75	14.38	14.38	14.25
Apr.	14.75	14.75	14.75	14.38	13.34	14.50
May	14.75	14.75	14.75	14.38	13.15	14.50
June	14.75	14.75	14.75	14.38	13.25	14.50
July	14.75	14.75	14.75	14.38	13.25	14.50
Aug.	14.75	14.75	14.75	14.38	13.25	14.62
Sept.	14.75	14.75	14.53	14.38	13.25	14.62
Oct.	14.75	14.75	14.38	14.38	13.25	14.62
Nov.	14.75	14.75	14.38	14.38	14.25	15.28
Dec.	14.75	14.75	14.38	14.38	14.25	15.50
Average	14.65	14.75	14.64	14.38	13.69	14.62



# FERROMANGANESE PRICES

Dollars per Gross Ton

Eastern Furnaces



## Ferroalloys Furnace Bricks

### FERROMANGANESE

Eastern Producers, Carloads, Cents Per Lb

	1938	1939	1940*	1942**	1947**	1948†	1949	1950	1951	1952	1953‡	1954‡	1955	1956
Jan.	4.88	3.79	4.46	5.36	6.03	6.47	7.21	7.74	8.27	8.31	10.10	10.00	9.50	10.25
Feb.	4.88	3.57	4.46	5.36	6.03	6.47	7.21	7.74	8.31	8.31	10.10	10.00	9.50	10.25
Mar.	4.58	3.57	4.46	5.36	6.03	6.47	7.56	7.74	8.31	8.31	10.10	10.00	9.50	10.25
Apr.	4.58	3.57	4.46	5.36	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.65
May	4.58	3.57	4.46	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.12	10.00	9.50	10.75
June	4.58	3.57	4.91	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.75
July	4.13	3.57	5.36	6.03	6.03	6.47	7.74	7.74	8.31	8.31	10.00	10.00	9.50	10.75
Aug.	4.13	3.57	5.36	6.03	6.03	6.47	7.74	7.74	8.31	8.65	10.00	10.00	9.50	10.75
Sept.	4.13	4.24	5.36	6.03	6.03	6.47	7.74	7.74	8.31	10.00	10.00	9.50	9.50	11.25
Oct.	4.13	4.46	5.36	6.03	6.47	7.23	7.74	7.74	8.31	10.00	10.00	9.50	9.50	11.75
Nov.	4.13	4.46	5.36	6.03	6.47	7.23	7.74	7.87	8.31	10.00	10.00	9.50	9.50	11.75
Dec.	4.13	4.46	5.36	6.03	6.47	7.23	7.74	8.09	8.31	10.00	10.00	9.50	10.25	12.94
Average	4.35	3.87	4.95	5.80	6.14	6.66	7.64	7.79	8.31	8.92	10.04	9.83	10.91	10.93

† Seaboard price prior to Oct. 7, 1948. ‡ Starting June, 1953, prices reflect new standard of 74 to 76 pct Mn. Prices prior to that converted from older gross ton pricing method and were based on standard of 78-82 pct Mn. \* Price unchanged at 5.36¢ through 1941. \*\* Price unchanged at 6.03¢ from 1943 through 1946.

### 50 PCT FERROSILICON

Cents per lb contained Si, Carloads, Delivered\*

	1951	1952	1953	1954	1955	1956
Jan.	12.40	12.40	12.40	12.40	12.00	12.75
Feb.	12.40	12.40	12.40	12.40	12.00	12.75
Mar.	12.40	12.40	12.40	12.40	12.00	12.75
Apr.	12.40	12.40	12.40	10.80	11.00	12.75
May	12.40	12.40	12.40	10.80	11.00	12.75
June	12.40	12.40	12.40	10.80	11.00	12.75
July	12.40	12.40	12.40	10.80	11.00	12.75
Aug.	12.40	12.40	12.40	10.80	11.00	12.75
Sept.	12.40	12.40	12.40	11.52	11.00	13.15
Oct.	12.40	12.40	12.40	12.00	11.75	13.50
Nov.	12.40	12.40	12.40	12.00	11.75	13.50
Dec.	12.40	12.40	12.40	12.00	11.75	13.90
Average	12.40	12.40	12.40	11.56	11.43	12.90

\* F.o.b. shipping point after Oct. 1, 1955.

### CHEM. BONDED MAGNESITE BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1950	1951	1952	1953	1954	1955	1956
Jan.	\$80.00	\$93.00	\$93.00	\$97.50	\$97.50	\$7.50	\$102.00
Feb.	80.00	93.00	93.00	97.50	97.50	7.50	102.00
Mar.	80.00	93.00	93.00	97.50	97.50	7.50	102.00
Apr.	80.00	93.00	93.00	97.50	97.50	7.50	102.00
May	80.00	93.00	93.00	97.50	97.50	7.50	102.00
June	80.00	93.00	93.00	97.50	97.50	7.50	102.00
July	80.00	93.00	93.00	97.50	97.50	7.50	102.00
Aug.	83.00	93.00	93.00	97.50	97.50	7.50	109.00
Sept.	83.00	93.00	93.00	97.50	97.50	7.50	109.00
Oct.	86.00	93.00	97.50	97.50	97.50	7.50	109.00
Nov.	86.00	93.00	97.50	97.50	97.50	7.50	109.00
Dec.	86.00	93.00	97.50	97.50	97.50	7.50	109.00
Average	82.08	93.00	94.13	97.50	97.50	98.59	104.92

### SPIEGELEISEN, 19 TO 21 PCT.

Palmerton, Pa., Carloads, Gross Ton

	1951	1952	1953	1954	1955	1956
Jan.	\$75.00	\$75.00	\$85.00	\$86.00	\$86.00	\$91.50
Feb.	75.00	75.00	85.00	86.00	86.00	91.50
Mar.	75.00	75.00	85.00	86.00	86.00	91.50
Apr.	75.00	75.00	85.00	86.00	86.00	94.00
May	75.00	75.00	85.00	86.00	86.00	94.00
June	75.00	75.00	86.00	86.00	86.00	94.00
July	75.00	75.00	86.00	86.00	86.00	94.00
Aug.	75.00	82.50	86.00	86.00	86.00	96.00
Sept.	75.00	85.00	86.00	86.00	86.00	96.00
Oct.	75.00	85.00	86.00	86.00	87.50	99.50
Nov.	75.00	85.00	86.00	86.00	88.00	99.50
Dec.	75.00	85.00	86.00	86.00	88.00	99.50
Average	75.00	79.96	85.58	86.00	86.45	95.08

### CHEM. BONDED CHROME BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1950	1951	1952	1953	1954	1955	1956
Jan.	\$69.00	\$82.00	\$82.00	\$86.00	\$86.00	\$86.00	\$91.00
Feb.	69.00	82.00	82.00	86.00	86.00	86.00	91.00
Mar.	69.00	82.00	82.00	86.00	86.00	86.00	91.00
Apr.	69.00	82.00	82.00	86.00	86.00	86.00	91.00
May	69.00	82.00	86.00	86.00	86.00	86.00	91.00
June	69.00	82.00	86.00	86.00	86.00	86.00	91.00
July	69.00	82.00	82.00	86.00	86.00	86.00	91.00
Aug.	71.40	82.00	82.00	86.00	86.00	86.00	96.00
Sept.	72.00	82.00	82.00	86.00	86.00	86.00	96.00
Oct.	75.00	82.00	86.00	86.00	86.00	86.00	96.00
Nov.	77.00	82.00	86.00	86.00	86.00	91.00	99.00
Dec.	77.00	82.00	86.00	86.00	86.00	91.00	99.00
Average	71.28	82.00	83.00	86.00	86.00	88.93	93.92

### SILICA BRICK STANDARD GRADE

Mt. Union, Pa., Ensley, Ala., Carloads per 1000 Brick, F.o.b. plant

	1951	1952	1953	1954	1955	1956
Jan.	\$94.60	\$94.60	\$99.30	\$115.00	\$120.00	\$128.00
Feb.	94.60	94.60	99.30	115.00	120.00	128.00
Mar.	94.60	94.60	99.30	115.00	120.00	128.00
Apr.	94.60	94.60	99.30	115.00	120.00	128.00
May	94.60	94.60	99.30	115.00	120.00	128.00
June	94.60	94.60	99.30	115.00	120.00	128.00
July	94.60	94.60	99.30	115.00	124.00	128.00
Aug.	94.60	94.60	99.30	115.00	128.00	140.00
Sept.	94.60	94.60	106.72	119.00	128.00	140.00
Oct.	94.60	99.30	115.00	120.00	128.00	140.00
Nov.	94.60	99.30	115.00	120.00	128.00	140.00
Dec.	94.60	99.30	115.00	120.00	128.00	140.00
Average	94.60	95.78	103.01	116.58	123.86	133.00

### BURNED MAGNESITE BRICK

F.o.b. Baltimore, Dollars per Net Ton

	1950	1951	1952	1953	1954	1955	1956
Jan.	\$91.00	\$104.00	\$104.00	\$109.00	\$109.00	\$109.00	\$114.00
Feb.	91.00	104.00	104.00	109.00	109.00	109.00	114.00
Mar.	91.00	104.00	104.00	109.00	109.00	109.00	114.00
Apr.	91.00	104.00	104.00	109.00	109.00	109.00	114.00
May	91.00	104.00	104.00	109.00	109.00	109.00	114.00
June	91.00	104.00	104.00	109.00	109.00	109.00	114.00
July	91.00	104.00	104.00	109.00	109.00	109.00	114.00
Aug.	93.40	104.00	104.00	109.00	109.00	109.00	121.00
Sept.	94.00	104.00	104.00	109.00	109.00	109.00	121.00
Oct.	97.00	104.00	109.00	109.00	109.00	109.00	121.00
Nov.	99.00	104.00	109.00	109.00	109.00	114.00	121.00
Dec.	99.00	104.00	109.00	109.00	109.00	114.00	121.00
Avg.	93.28	104.00	105.25	109.00	109.00	109.83	116.92

### FIRST QUALITY FIRE CLAY BRICK

Pa., \* Ky., Mo., Ill., Md., Ohio, F.o.b. Plant\*\*

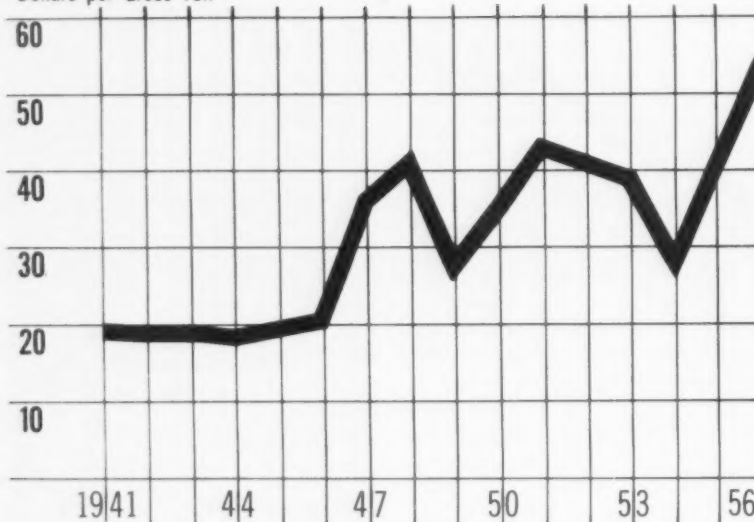
	1950	1951	1952	1953	1954	1955	1956
Jan.	\$86.00	\$94.60	\$94.60	\$99.30	\$109.00	\$114.00	\$122.00
Feb.	86.00	94.60	94.60	99.30	109.00	114.00	122.00
Mar.	86.00	94.60	94.60	99.30	109.00	114.00	122.00
Apr.	86.00	94.60	94.60	99.30	109.00	114.00	122.00
May	86.00	94.60	94.60	99.30	109.00	114.00	122.00
June	86.00	94.60	94.60	99.30	109.00	114.00	122.00
July	86.00	94.60	94.60	99.30	109.00	118.00	122.00
Aug.	86.00	94.60	94.60	99.30	109.00	122.00	128.00
Sept.	86.00	94.60	94.60	105.12	113.00	122.00	128.00
Oct.	91.16	94.60	99.30	109.00	114.00	122.00	128.00
Nov.	94.60	94.60	99.30	109.00	114.00	122.00	128.00
Dec.	94.60	94.60	99.30	109.00	114.00	122.00	128.00
Avg.	88.03	94.60	95.78	102.21	110.58	117.66	124.50

\* Add \$5.00 for Salina, Pa., after May, 1949.  
\*\* Carloads per 1000 brick.

# STEEL SCRAP PRICES

Dollars per Gross Ton

The Iron Age Composite



## Average of Iron Age Scrap Prices. Pittsburgh, Chicago, Philadelphia Per Gross Ton

	1945	1946	1947	1948	1949	1950
Jan.	\$19.17	\$19.17	\$31.00	\$40.81	\$41.36	\$26.58
Feb.	19.17	19.17	33.31	40.35	43.21	27.25
Mar.	19.17	19.17	38.65	40.00	35.43	28.05
Apr.	19.17	19.17	33.65	40.31	23.86	29.04
May	19.17	19.17	29.81	40.60	22.67	33.40
June	19.17	19.17	32.79	40.66	20.78	38.29
July	19.17	19.17	37.95	41.60	19.33	37.25
Aug.	19.17	19.17	39.46	43.16	20.85	39.85
Sept.	19.17	19.17	37.77	43.16	25.67	40.69
Oct.	19.17	19.17	40.50	43.16	26.40	40.67
Nov.	19.17	23.34	41.21	43.04	29.98	40.98
Dec.	19.17	28.23	40.00	43.00	27.18	44.02
Average	19.15	20.27	38.36	41.65	27.56	34.75

	1951	1952	1953	1954	1955	1956
Jan.	\$46.15	\$42.00	\$42.00	\$28.67	\$34.62	\$52.33
Feb.	44.19	42.00	42.92	25.82	38.16	48.75
Mar.	43.00	42.00	44.18	23.83	37.27	49.43
Apr.	43.00	42.00	41.75	25.38	36.50	54.88
May	43.00	42.00	38.59	27.79	34.48	51.17
June	43.00	41.37	40.97	27.88	34.96	45.08
July	43.00	40.10	44.60	26.87	39.50	46.42
Aug.	43.00	42.00	43.46	28.33	43.96	56.10
Sept.	43.00	42.00	38.53	29.71	44.25	58.58
Oct.	42.50	42.00	32.67	32.83	44.75	56.80
Nov.	42.00	42.00	35.21	33.40	45.47	61.67
Dec.	42.00	42.00	31.33	32.46	50.42	63.33
Average	43.15	41.79	39.52	28.59	40.19	53.70

\* Estimate

### CHICAGO HEAVY MELTING SCRAP

Prices of No. 1 Scrap, Per Gross Ton

	1945	1946	1947	1948	1949	1950
Jan.	\$18.75	\$18.75	\$29.75	\$39.56	\$40.06	\$26.70
Feb.	18.75	18.75	31.63	39.12	35.63	27.50
Mar.	18.75	18.75	36.69	38.95	33.70	28.25
Apr.	18.75	18.75	33.05	39.18	23.63	28.75
May	18.75	18.75	29.38	39.25	23.00	33.75
June	18.75	18.75	30.88	39.25	20.85	38.75
July	18.75	18.75	36.97	40.81	19.75	37.25
Aug.	18.75	18.75	39.88	41.75	22.00	39.15
Sept.	18.75	18.75	38.75	41.75	26.30	39.81
Oct.	18.75	18.75	40.50	41.75	25.50	39.75
Nov.	18.75	23.13	39.13	41.75	30.30	39.75
Dec.	18.75	27.25	38.90	41.75	26.75	43.44
Average	18.75	19.87	35.45	40.40	27.29	35.32

	1951	1952	1953	1954	1955	1956
Jan.	\$44.63	\$41.50	\$41.50	\$28.13	\$34.50	\$50.10
Feb.	43.02	41.50	42.50	25.50	34.00	46.63
Mar.	42.50	41.50	43.50	24.50	34.90	48.00
Apr.	42.50	41.50	39.88	26.13	35.50	54.00
May	42.50	41.50	36.25	30.38	32.90	50.50
June	42.50	40.75	39.30	31.40	33.25	44.00
July	42.50	39.30	43.38	28.88	38.00	44.50
Aug.	42.50	41.50	42.25	29.50	40.90	55.50
Sept.	42.50	41.50	34.40	30.00	41.75	59.00
Oct.	42.50	41.50	31.00	33.75	43.25	56.90
Nov.	41.50	41.50	33.88	33.00	43.70	62.50
Dec.	41.50	41.50	31.00	33.00	49.13	64.00
Average	42.75	41.75	38.24	29.71	38.48	52.97

† OPS basing point price ceiling. \* Estimate

### PHILADELPHIA HEAVY MELTING

Prices of No. 1 Scrap, Per Gross Ton

	1945	1946	1947	1948	1949	1950
Jan.	\$18.75	\$18.75	\$31.00	\$42.50	\$42.75	\$23.10
Feb.	18.75	18.75	33.38	41.50	39.75	23.00
Mar.	18.75	18.75	39.38	40.80	35.10	23.85
Apr.	18.75	18.75	33.10	41.50	23.00	25.39
May	18.40	18.75	29.69	42.31	22.00	28.70
June	18.25	18.75	33.63	42.50	19.50	34.63
July	18.75	18.75	39.45	43.12	17.50	32.81
Aug.	18.75	18.75	33.50	45.00	18.31	36.50
Sept.	18.75	18.75	36.80	45.00	23.35	38.50
Oct.	18.75	18.75	40.25	45.00	24.25	38.50
Nov.	18.75	22.94	42.63	44.75	24.50	39.44
Dec.	18.75	28.00	41.10	44.50	24.25	42.81
Average	18.68	19.87	36.50	43.20	26.19	32.27

	1951	1952	1953	1954	1955	1956
Jan.	\$46.70	\$41.50	\$41.50	\$27.63	\$32.87	\$54.10
Feb.	43.75	41.50	42.50	25.00	37.00	50.63
Mar.	42.50	41.50	44.30	22.10	38.40	50.40
Apr.	42.50	41.50	42.75	21.50	37.00	54.63
May	42.50	41.50	40.50	22.75	35.60	53.30
June	42.50	40.50	41.50	22.75	38.50	46.75
July	42.50	40.65	43.69	23.25	40.50	48.25
Aug.	42.50	41.50	43.38	26.00	45.50	55.80
Sept.	42.50	41.50	35.90	28.13	45.70	58.38
Oct.	42.10	41.50	31.50	30.75	46.50	56.80
Nov.	41.50	41.50	34.50	32.70	47.10	59.25
Dec.	41.50	41.50	29.90	31.38	51.00	62.00
Average	42.75	41.35	39.33	26.16	41.31	54.19

† OPS basing point price ceiling. \* Estimate

### PITTSBURGH HEAVY MELTING

Prices of No. 1 Scrap, Per Gross Ton

	1945	1946	1947	1948	1949	1950
Jan.	\$20.00	\$20.00	\$32.25	\$40.37	\$41.25	\$29.95
Feb.	20.00	20.00	34.94	40.43	39.25	31.25
Mar.	20.00	20.00	39.85	40.25	36.30	32.13
Apr.	20.00	20.00	35.40	40.25	24.94	33.00
May	20.00	20.00	30.38	40.25	23.00	37.75
June	20.00	20.00	33.88	40.25	22.00	44.50
July	20.00	20.00	38.45	40.87	20.75	41.50
Aug.	20.00	20.00	40.00	42.75	21.94	43.90
Sept.	20.00	20.00	37.75	42.75	27.38	43.75
Oct.	20.00	20.00	40.75	42.75	29.44	43.75
Nov.	20.00	23.94	41.88	42.75	31.95	43.75
Dec.	20.00	29.00	40.00	42.75	30.75	45.57
Average	20.00	21.08	37.13	41.38	29.08	39.16

	1951	1952	1953	1954	1955	1956
Jan.	\$47.13	\$43.00	\$43.00	\$30.25	\$36.50	\$52.50
Feb.	45.78	43.00	43.75	27.25	37.50	49.00
Mar.	44.00	43.00	44.75	24.90	38.50	49.90
Apr.	44.00	43.00	42.63	26.50	37.00	56.00
May	44.00	43.00	39.00	30.25	34.70	49.70
June	44.00	42.90	42.10	29.50	35.25	44.50
July	44.00	40.45	46.75	28.50	40.00	46.50
Aug.	44.00	43.00	44.75	29.50	45.00	57.00
Sept.	44.00	43.00	39.30	31.00	44.50	58.38
Oct.	43.00	43.00	35.50	34.00	44.50	56.70
Nov.	43.00	43.00	37.25	34.20	45.80	63.25
Dec.	43.00	43.00	33.10	33.00	51.13	64.00
Average	44.21	42.78	40.99	29.90	40.87	53.95

† OPS basing point price ceiling. \* Estimate

### MACHINERY CAST AT CHICAGO

No. 1 Scrap Delivered Per Gross Ton

	1941*	1946*	1947	1948	1949	1950
Jan.	\$18.88	\$20.00	\$43.38	\$68.00	\$57.25	\$38.50
Feb.	19.25	20.00	44.56	65.25	46.00	39.00
Mar.	20.75	20.00	48.00	68.50	41.20	39.75
Apr.	22.33	20.00	42.70	73.12	29.63	41.50
May	20.00	20.00	38.00	72.50	27.90	45.70
June	20.00	20.00	41.81	69.90	26.69	47.25
July	20.00	20.00	46.00	71.50	30.75	45.50
Aug.	20.00	20.00	49.38	74.30	39.30	49.10
Sept.	20.00	22.50	48.00	71.25	42.25	50.25
Oct.	20.00	25.00	51.00	68.87	41.25	52.80
Nov.	20.00	32.28	52.75	72.20	32.68	60.38
Dec.	20.00	41.05	60.30	69.50	39.85	64.50
Average	20.21	23.40	47.12	70.48	39.00	47.85

\* Changed from net ton bases April 30, 1941.  
\* Price unchanged at \$20.00 from 1942 through 1945.  
Ceiling prices do not include delivery costs.  
† Delivered. Nominal \$3 per ton deducted for shipping.

commission to put prices on F.o.b. basis for comparison purposes.  
\* OPS ceiling shipping point prices.  
\* Estimate

### CUPOLA CAST AT CINCINNATI

No. 1 Scrap Delivered, Per Gross Ton

	1951†	1952†	1953†	1954	1955	1956
Jan.	\$65.50*	\$49.00*	\$49.00*	\$36.50	\$39.50	\$46.50
Feb.	49.00*	49.00*	48.75	36.50	39.50	46.00
Mar.	49.00*	49.00*	46.30	34.50	39.50	45.90
Apr.	49.00*	49.00*	44.00	35.25	39.50	50.00
May	49.00*	49.00*	41.75	38.00	45.80	49.10
June	49.00*	49.00*	41.50	38.50	40.50	43.50
July	49.00*	43.50*	42.25	38.50	42.50	43.50
Aug.	49.00*	45.90*	42.50	38.50	44.50	46.90
Sept.	49.00*	49.00*	42.10	38.50	44.50	49.00
Oct.	49.00*	46.00*	41.25	39.50	46.50	48.50
Nov.	49.00*	46.00*	37.50	39.50	44.50	48.50
Dec.	49.00*	46.00*	36.90	39.50	45.50	48.50
Average	50.38	47.53	42.82	37.77	42.25	47.08

\* Average of No. 1 cupola cast prices.  
Ceiling prices do not include delivery costs.  
\* OPS ceiling shipping point prices.  
† Delivered. Nominal \$3 a ton deducted for shipping, commissions to put prices on comparable F.o.b. basis under OPS system. \* Estimate

# NOW —



THESE ESTABLISHED LOW VOLATILE METALLURGICAL COALS

ARISTA

CRAB ORCHARD

LAMAR

LOUISVILLE

MacALPIN

TAMS

WEST GULF

WINDING GULF

with over 12,000 tons per day production — 40 years reserve tonnage,  
originating on the Chesapeake & Ohio, Norfolk & Western, and Virginian railways

ARE DISTRIBUTED BY ONE EXCLUSIVE SALES AGENT

## C. H. SPRAGUE & SON CO.

Sales and Service from the offices listed below —

BOSTON 9, MASS.  
10 Post Office Sq.  
Tel.: Liberty 2-7807

CHICAGO 4, ILL.  
310 S. Michigan Ave.  
Tel.: Harrison 7-8233

CINCINNATI, OHIO  
822 Fed. Res. Bk. Bldg.  
Tel.: Main 1-2841

CLEVELAND, OHIO  
1610 Terminal Tower  
Tel.: Cherry 1-7771

DETROIT 26, MICH.  
1012 Ford Building  
Tel.: Woodward 1-9671

GRAND RAPIDS, MICH.  
304 Bldg. & Loan Bldg.  
Tel.: Glendale 8-3647

INDIANAPOLIS 4, IND.  
Merchants Bk. Bldg.  
Tel.: Melrose 7-4553

NEWPORT NEWS, VA.  
Sprague Bldg.  
Tel.: N. News 6-1331

NEW YORK 17, N. Y.  
150 East 42nd St.  
Tel.: Oxford 7-5060

PORTSMOUTH, N. H.  
Gosling Rd., Box 478  
Tel.: Geneva 6-4120

PROVIDENCE, R. I.  
1141 Hosp. Trust Bldg.  
Tel.: Gaspee 1-8500

RICHMOND, VA.  
Central Nat. Bk. Bldg.  
Tel.: Richmond 2-9066

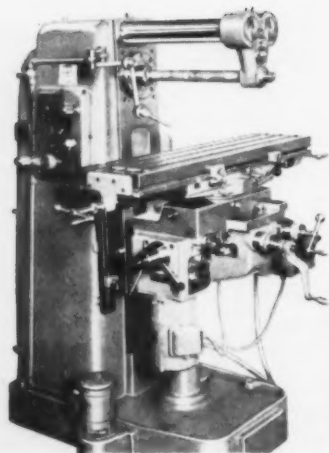
and C. H. SPRAGUE & SON (CANADA) LTD., 1478 St. Catherine Street West, MONTREAL

Merchandisers of Quality Bituminous Coal since 1870



## NEW EQUIPMENT

**New and improved production ideas, equipment, services and methods described here offer production economies... for more data use the free postcard on page 273 or 274.**

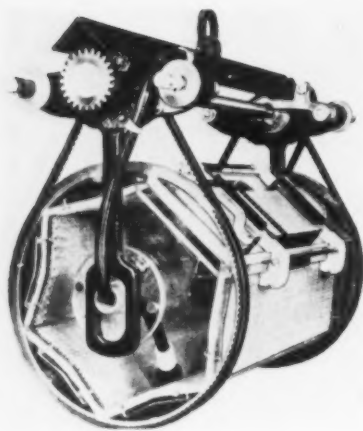


### Geared head horizontal miller uses 12 spindle speeds

This geared head horizontal milling machine comes in both plain and universal types. It operates with 12 spindle speeds from 35.5 to 1400-rpm. The spindle mounts in anti-friction bearings through use of taper roller bearings in the rear. The knee gives ample support to the table with wide bearing support and a solid top. The double overarm offers high rigidity. All slide ways are scraped and provided with adjustable gibs. Its table will swivel 45°, left or right. A number of extra attachments makes the machine suitable for a large num-

ber of milling uses. The gear box has hardened gears of alloy steel. Spline shafts are hardened and ground. Pinion and bull gears on the spindle have helical ground teeth, to insure freedom from vibration and noise. There are six high speeds through a special belt to eliminate chatter; six low speeds, directly through the gear train, give low driving torque to the cutter. Speeds and feeds are read directly from large, graduated dials. Push-buttons are in easy reach. *Morey Machinery Co.*

For more data circle No. 28 on postcard, p. 273

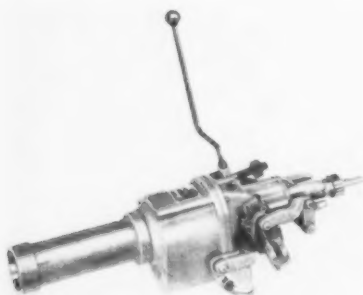


### Belt drive simplifies maintenance on plating cylinder

Featuring a newly designed belt drive, a barrel plating cylinder simplifies and minimizes maintenance time and costs. A standard cogged V-belt drives it, eliminating gears. Because of the design simplicity, there are no moving parts on the cylinder. This does away with wear and resulting parts replacement. The motor can be mounted on a hanger superstructure to offer flexibility in use on existing equipment. The cylinder can be used in any normal preparation or plating solution. The barrel

is designed for total submersion during the plating process. This increases plating speeds and insures thorough plating action. Double flexible dangle contacts are used with the barrel, carrying current into the cylinder through both ends, providing high plating capacity. Cylinder hangers are completely insulated from contacts and hanger pins. The cylinder is bussed to carry 1000-amp. It can be interchanged. *Hanson-Van Winkle-Munning Co.*

For more data circle No. 29 on postcard, p. 273



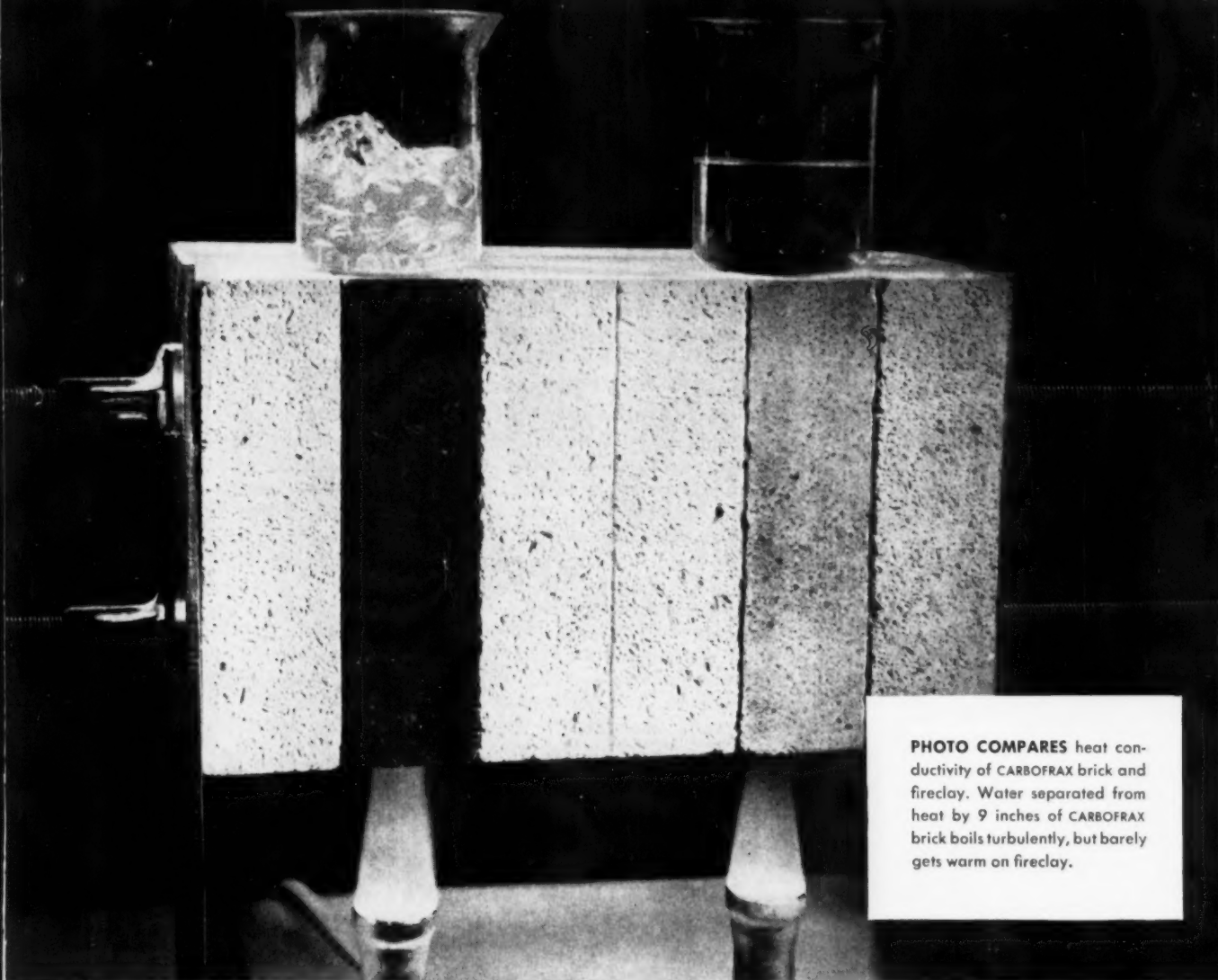
### One lead screw cuts all listed pitches, cuts downtime

A new precision adjustable pitch lead screw tapper offers elimination of downtime to change lead screws. One lead screw cuts all listed pitches. Available in two models, one unit allows conversion from 11 pitch to 12, 13, 14, 16, 18, 20, 24 and 28 pitch in a matter of seconds. The other converts from 24 pitch threads to 28, 32, 36, 40, 44, 48, 56, 64, 72 and 80 pitch with equal ease

and speed. A precision, graduated scale indicates pitch settings. It is attached to a lever which controls the vertical travel of the lead screw follower and the tap. Adjustments of the graduated scale gives speedy conversion from one pitch to another. It is recommended for long precise production tapping runs and job shop uses. *Jarvis Corp.*

For more data circle No. 30 on postcard, p. 273





**PHOTO COMPARES** heat conductivity of CARBOFRAX brick and fireclay. Water separated from heat by 9 inches of CARBOFRAX brick boils turbulently, but barely gets warm on fireclay.

## Refractories—for high heat conductivity

High heat conductivity—roughly 11 times that of fireclay and about 70% that of chrome-nickel steels—is one of the properties of CARBOFRAX® silicon carbide refractories. It is an ideal material for muffles, radiant tubes, retorts and similar structures where you need exceptional resistance to direct flame plus the ability to conduct heat efficiently. At 2200°F, thermal conductivity of CARBOFRAX brick is 109BTU/hr., sq. ft. and °F/in. of thickness.

CARBOFRAX refractories typify the many super refractories pioneered by Carborundum. Each has a wide range of properties. One, for example, is formed into precision parts that look like cast iron yet resist over 3000°F. Another, a new ceramic fiber, filters and insulates at temperatures no existing mineral or glass fiber can take.

For valuable information about high temperature problems—and other pertinent information about refractories—or for help on your own particular problem—fill in and mail this coupon today:

**MAIL THIS COUPON TODAY**

**Refractories Division,  
The Carborundum Company, Perth Amboy, N. J., Dept. B17**

Please send me:

- ☐ Forthcoming issue of Refractories Magazine
- ☐ Bulletin on Properties of Carborundum's Super Refractories
- ☐ Here is a description of my high temperature problem. Can you help me?

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**CARBORUNDUM**

Registered Trade Mark

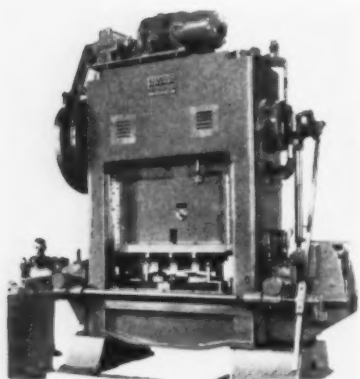


### Air conditioners ready to install in small shops

Self-contained, new air conditioning units come in 3, 5, 7½, 10, 15 and 20-ton sizes for installation in small shops and factories or offices. Heavy gage furniture steel is used for cabinet construction. This is coated with a rust-resistant primer and finished with gray metallescent enamel. Inside is a sloped cooling coil (evaporator) de-

sign. This allows a large cooling area for a given coil size. The greater the coil area over which a given amount of intake air is passed, the greater the cooling and dehumidification efficiency. It has spiral aluminum fins and staggered copper tubes. Many safety devices are built-in. *American Blower Corp.*

For more data circle No. 31 on postcard, p. 273



### Press features low vibration, high speed

Low vibration is a key feature of this 200-ton high speed press. During check-out runs at the manufacturer's plant, it was fitted with an 8-station progressive die and operated at 150 strokes per minute with a 4-in. stroke. During this run, a coin remained balanced on the edge of the bolster, attesting to the lack of unwanted vibration. The press can produce up to 250 strokes per minute. The slide, fitted with four pre-loaded ball bearing race-

ways, contributes to a high degree of vertical accuracy; the bottom of the ram is parallel to the bed within  $\pm 0.0005$ -in. Pre-loading and antifricition construction retains this accuracy for the machine's life. It is equipped with an air friction type clutch and scrap cutter. The high speed press is powered by a 25-hp variable speed motor. *Precision Welder & Flexopress Corp.*

For more data circle No. 32 on postcard, p. 273



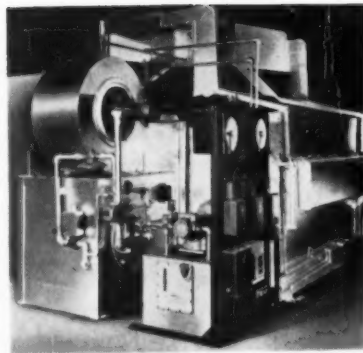
## SUPER MARKET SHOPPING

### Furnace flattens steel sheets while tempering

Of the circulating type, this furnace flattens steel sheets while tempering or precipitation hardens aircraft wing section skins in sizes up to 74 x 100-in. Either gas or electric heated, the furnace handles material such as 17-7PH. Inside the furnace are two cast iron dies. The bottom die is stationary and the top one is mounted to the hydraulic cylinder with a ball joint. There are doors front and back

allowing the furnace to be used at both ends. The controls can be any combination desired. Control in the air stream is proportional, and in series with a controller in the die. These controls hold temperatures to  $\pm 5^\circ$ , in the range of 250 to 1100°F. A Vickers hydraulic unit is at one side, and operates a hydraulic cylinder at the top of the furnace. *Waltz Furnace Co.*

For more data circle No. 33 on postcard, p. 273

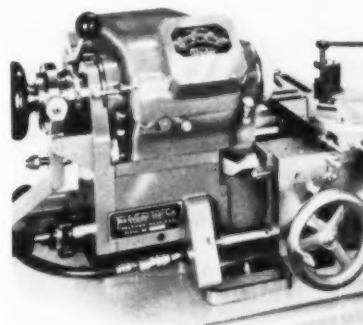


### Maker offers air operated ball bearing lever closer

Although this new lever closer is available for new machines only, and at the present time installation must be made at one manufacturing plant, it is receiving considerable attention of users of that firm's equipment. Its operating features are simple: with actual piston speed easily controlled for either direction, an air cylinder plunger, operated by electric valves and tied to a simple mechanical

linkage, provides the force to actuate the lever closer. The electric valves are remotely controlled by either push buttons or foot switches. The lever closer fingers are actuated by a ball bearing and there is no load on this bearing in either the on or off position, thus insuring long, trouble-free life. A pressure gage controls operating pressure. *The Wade Tool Co.*

For more data circle No. 34 on postcard, p. 273



## FOR CUSTOMIZED CONVEYORS WITH MAY-FRAN STANDARDIZATION

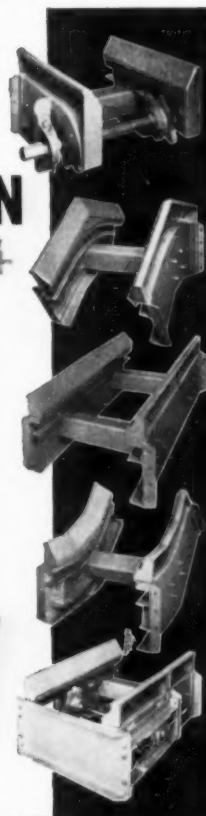
Developed to provide the ultimate of versatility, the May-Fran program of **STANDARDIZATION** permits users to create and construct their own conveyors to meet individual needs.

It literally provides a type of "super market" shopping for the straight, curved, inclined, take-up and discharge end sections required to meet the specifications of **YOUR** job requirements. Sections can be furnished to meet belt width as well as load bearing and volume capacities. Conveyors can be changed relative to length or width with only a minimum of downtime.

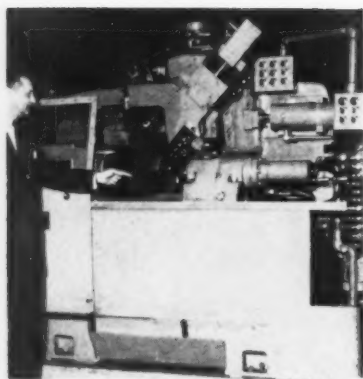
**MAY-FRAN**  
ENGINEERING, INC.  
1698 Clarkstone Rd. • Cleveland 12, Ohio



Write today . . .  
ask for a copy of  
MF Bulletin No. 200



2200 MF

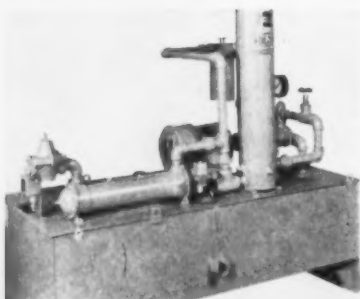


### Automatic lathes available from another manufacturer

The complete line of Hydra-Feed Lathes are being manufactured, sold and serviced by a new company. Available in four sizes in both multiple tool production and tracer lathes, these machines are designed for easy automation, high carbide performance, large metal removal rates and automatic chip removal. Hydraulically operated carriages and slides may be set to perform automatically practically any combination or sequence of op-

erations. Tool pressures on rear tools are downward instead of upward as on conventional automatics. Automatic multiple cycling is provided when desired. This permits consecutive roughing and finishing in the same setup with the same tooling without stopping the machine. Either cam control of carriages and slides or tracer operation are available on the machine. *The Bullard Co.*

For more data circle No. 35 on postcard, p. 273



### Pump units lubricate bearing journals on high speed mills

New pressure lubrication units lubricate bearing journals on high speed four-high foil mills. The 150-gal pumping unit delivers 18-gpm at 50-psi to the mill journals. Lubricating oil viscosity is 1200-SSU at 100°F. Bypass filtration removes foreign particles larger than 5-micron. The unit is equipped with an 1018-Btu per minute heat

exchanger and automatic controls to maintain constant temperature and to prevent the build-up of abnormally high pressure. The setup may be used where it is desired to install a self contained packaged lubricating system for industrial machinery and mills. *Cardwell Machine Co.*

For more data circle No. 36 on postcard, p. 273

**QUALITY and SERVICE**

**more tonnage per edge**

**AMERICAN SHEAR KNIFE CO.**  
HOMESTEAD, PENNSYLVANIA

### Plastic package

A new transparent plastic package provides protection and illustration of a company's "throw-away" carbide inserts for tool holders. The package allows instant identification as to insert style, carbide grade and quantity. It is simple to handle, easily opened and closed. *Vascoloy-Ramet Corp.*

For more data circle No. 37 on postcard, p. 273

### Colloidal dispersion

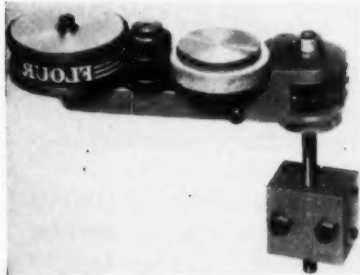
A new colloidal dispersion of metallic copper in a lacquer solution provides a highly conductive surface coating. The "dag" copper dispersion is economical and easily applied. Application may be by spray or brush with dilution in the ratio of two parts of the product to one part of thinner for spraying and only a slight dilution of the concentrated material for brushing. A stiff brush should be used since a soft brush will permit the copper to settle to the under-side of the film, leaving an excess of lacquer on its surface. Dip coating is not recommended. No baking is required. *Acheson Colloids Co.*

For more data circle No. 38 on postcard, p. 273



### Marker

This automatic continuous rotation conveyor-line marker has a small diameter. Its narrow wheel imprints light packages and other items requiring type impressions not to exceed  $\frac{3}{8}$ -in. high. It is a double friction drive unit with



print wheel, inking roll and fountain roll all driven by the product as it passes under or alongside the marking wheel. The wheel will take up to  $\frac{3}{8}$ -in. high interchangeable rubber type or logotypes. *Wm. A. Force & Co., Inc.*

For more data circle No. 39 on postcard, p. 273

### Solubilizer

An organic type water-softener, solubilizer, sequestering agent and stabilizer can be used in many applications. Samples of the material will be furnished gratis to all domestic companies when requests are made on business letterheads. *Globe Compound Co., Inc.*

For more data circle No. 40 on postcard, p. 273

### Grinding wheels

Two new fibreglass-reinforced resinoid grinding wheels are said to have superior strength. One is a foundry cut-off wheel available in diameters up to 20-in. The other is a depressed center type wheel that comes in 7 and 9-in. diam. The cut-off wheel can be used on steel alloys and non-ferrous castings. Designed for grinding normally hard to get at spots with portable units, the depressed center reinforced wheel can notch castings risers for knock-off, deburr, slot, clean welds and perform light snagging and clean up operations on fabricated steel structures. *Electro Refractories & Abrasives Corp.*

For more data circle No. 41 on postcard, p. 273

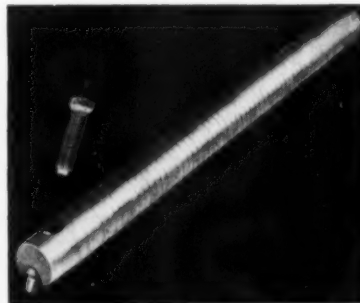
### Teflon film

Cast Teflon film is now being produced to a 4-mil thickness. This is possible due to a process of depositing sub-micron-sized particles of Teflon on a highly polished metal substrate. The extra-tough 4-mil film is made in a series of operations consisting of dipping, drying and complete fusing of each of 12 separate layers. The films are free of voids, pinholes and physical surface disturbances. It possesses high dielectric strength and as long dielectric life. *Dilectrix Corp.*

For more data circle No. 42 on postcard, p. 273

### No-chatter bore-bar

Vibration-proof and chatterless, a new boring bar is equipped with a micrometer adjustment to adjust cutting tools in thousandths. Constructed of shock-absorbent material and alloy heat-treated steel, the



boring bar is offered with cutting tool at 53° or 90° angle, and micrometer adjustment tool bit. A non-adjustable conventional type tool bit is also available. The bar is graduated every quarter-inch to indicate depth of boring. *Modern Mfg. Co.*

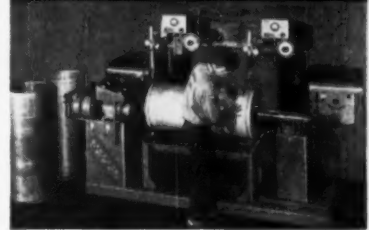
For more data circle No. 43 on postcard, p. 273

### Hacksaw blade

Both ferrous and nonferrous metal sections and billets can be sawed with a new power hacksaw blade. With only three teeth per inch, it removes more chips of metal per tooth. The blade comes in three brands and 14, 18, 21 and 24-in. lengths. *Henry Disston Div., H. K. Porter Co., Inc.*

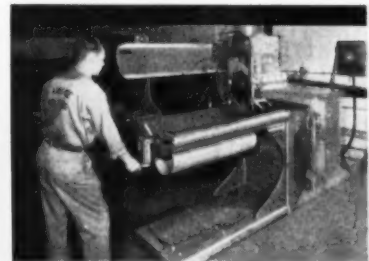
For more data circle No. 44 on postcard, p. 273

## how to make fusion butt welding a push-button operation



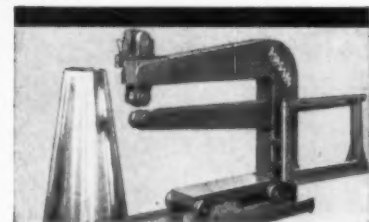
### CIRCUMFERENTIAL automatic welding fixture

Designed for circular welding of components with automatic chucking and ejection of parts and transfer. Chuck expands internally for sizing. Surface speed to 300° per min.



### LONGITUDINAL automatic fusion butt welding fixture

Hold-down fingers with "toe touch" control lock parts in position for welding. Back-up mandrell with up to 6 copper inserts permits fast job changes. Handles all weldable metals .005 to 1" thick and lengths from 2' to 12'.



### ROLL PLANISHING FIXTURE

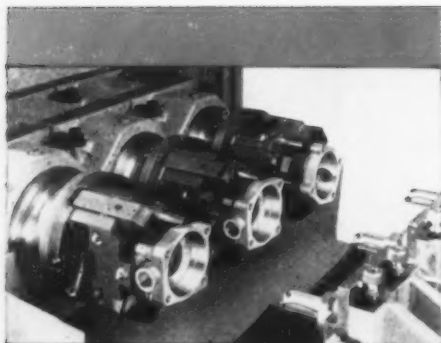
Cold-rolls and smoothes fusion welds (circ. & longit.) under controlled pressure up to 10 tons. Handles 1½" to 10' dia. and lengths to 16'.

Write today for further information  
785 No. Prairie Ave., Hawthorne 2, Calif.

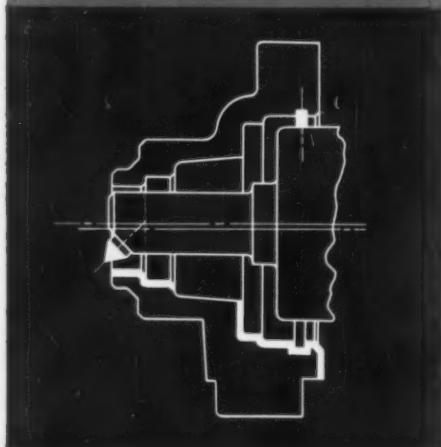
**Airline WELDING**  
WELDING & ENGINEERING

**FIXTURES & POSITIONERS**

"guides the arc to the mark"



Showing parts mounted in the chuck. Without chuck changes, any of three parts having different exterior forms but identical interior contours can be accommodated.



12 operations are performed in one machine cycle. Heavy lines denote surfaces machined.

# Intricate contouring is fast, accurate—

## 12 operations in one cycle!

Direct cam action—no levers—provides Ex-Cell-O Precision Boring Machines with accuracy, versatility and speed in difficult contouring operations.

In the application shown here—contouring an internal form in die-cast aluminum end covers—limits on diameters are held as close as plus or minus .0005 inch, and three work pieces are completed at a time. 12 separate operations are performed in one machine cycle, including precision boring, facing, chamfering and grooving.

Cams can be changed in minutes. Cam assembly swings out for quick, easy change. All motors are outside the base.

Another Ex-Cell-O feature is the large chip chute, cast as an integral part of the base. There are no openings where chips or coolant can enter the base. Contact your Ex-Cell-O representative or write direct for complete information.

## EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES  
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS  
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

56-52



At left: The Ex-Cell-O Styled 312 Cam Operated Precision Boring Machine. A smaller model, the Ex-Cell-O Style 308, is also available because of the demand for this type of machine.

# The Iron Age SUMMARY...

**Ruling against fast-tax for steel puts mills on the spot . . . Increases the pressure on steel prices . . . Mills enter new year under burden of heavy carryovers.**

**Bad News . . .** The Government's decision against fast-tax writeoffs for steel expansion projects has put expansion-minded steel companies in a tough spot. As a result, most mills are carefully reappraising new construction projects this week.

One thing is certain: the decision will bring about delays in some projects, deferments of others. How seriously it will affect long-range expansion projects remains to be seen.

At the time the Government's decision was announced, some \$2 billion worth of steel expansion was up for fast-tax amortization. Immediate reaction of some mills was that the ruling would have no effect on their plans. Others indicated that some projects would be shelved temporarily, while others would be held up.

The mills had been counting on a reopening of fast-tax goals as a means of helping them to finance projects already under way or on the drawing boards. With the special tax privileges out the window, financing plans will have to be refigured.

**Going Up . . .** Denial of fast-tax also adds fuel to the growing pressure on steel prices. Some base prices and extras were already on the way up before the Government turned thumbs down on tax-am. The 3-cents-an-hour pay boost for

steel workers under cost-of-living clauses in union contracts has further narrowed the mills' profit margins.

Meanwhile, the mills are hard-pressed to keep up with demand. They entered the new year with very heavy carryovers on most major products. The situation is particularly embarrassing in plates, structural shapes, seamless pipe, linepipe, and hot-rolled sheets. In plates, seamless, and linepipe, the supply problem is worsening rapidly.

Dozens of construction projects have been delayed due to the scarcity of structural shapes. One consumer who placed an order a year ago reported delivery was nearly three months late. Orders for linepipe are stretched out through 1958. Oil well drilling this year is likely to set a new record. On top of that, the average well depth has been gradually increasing.

**The Outlook . . .** With most metalworking companies looking for another banner year, steel supply will be tight despite the 5 million tons of new capacity added in 1956. (See page 404.) Also, the blowup in Suez will mean (1) all-out construction of oil tankers, (2) record drilling in the oil fields, and (3) higher defense spending and stepped-up foreign aid.

## Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,389	2,389	2,486	2,262
<b>Ingot Index</b>				
(1947-1949=100)	148.7	148.7	154.8	146.2
<b>Operating Rates</b>				
Chicago	102.0	101.0	100.0	98.5
Pittsburgh	98.0	90.0*	97.0	98.0
Philadelphia	102.0	104.0	105.0	103.0
Valley	96.0	84.0*	100.0	96.0
West	100.0	100.0	100.0	97.5
Detroit	104.0	86.0*	106.0	95.0
Buffalo	105.0	105.0	105.0	105.0
Cleveland	90.0	104.0*	107.0	98.5
Birmingham	90.0	92.0	94.0	95.0
S. Ohio River	95.5	98.0*	97.0	91.0
Upper Ohio R.	100.0	96.0	105.0	97.0
St. Louis	64.0	94.0	105.0	102.0
Northeast	99.0	100.0	100.0	83.0
<b>Aggregate</b>	97.0	97.0	101.0	97.5

\*Revised

## Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
<b>Composite price</b>				
Finished Steel, base	5.622	5.622	5.622	5.174
Pig Iron (Gross Ton)	\$62.90	\$63.04	\$63.04	\$59.09
Scrap, No. 1 hvy (gross ton)	\$63.50	\$63.50	\$64.33	\$53.33
<b>Nonferrous</b>				
Aluminum ingot	27.10	27.10	27.10	24.40
Copper, electrolytic	36.00	36.00	36.00	43.00
Lead, St. Louis	15.80	15.80	15.80	15.80
Magnesium ingot	36.00	36.00	36.00	33.25
Nickel, electrolytic	74.00	74.00	64.50	64.50
Tin, Straits, N. Y.	101.00	102.25	110.50	107.75
Zinc, E. St. Louis	13.50	13.50	13.50	13.00

\*Revised

## Freight Hike Adds to Costs

**Effects of 7 pct raise in east and slated 5 pct increase in the west will be felt by producers and consumers . . . New pipe mill is readied for operation by Bethlehem.**

◆ ANOTHER PUSH toward steel price increases has been provided by the recent freight rate advances made by eastern and western railroads.

With the exception of the case of iron ore—where producers felt previous freight charges were adequate for the carriers—the producers didn't question the necessity of the move.

However, there's little doubt that it's just one more straw on the price camel's back and the pressure to hike base prices is greater than ever.

U. S. Steel Export Co., for example, has already announced revisions on its export price bases with freight included to New York City, Philadelphia and Baltimore. The increases, effective with shipments on and after Dec. 28, are attributed to "higher export carload freight rates applicable on railroad shipments to North Atlantic Seaboard Ports."

Eastern freight rates were advanced 7 pct, effective Dec. 28. Rates in western shipping areas and on shipments between territories are slated to raise by 5 pct. Coastal shipping charges will also go up 5 pct, probably early this month.

The new freight rates mean that a Pittsburgh mill will pay: 24 cents a ton more for ore from the Mesabi, 10 cents more on coal shipments and 15 cents a ton more on limestone shipments from Martinsburg.

In addition, the new rate will add 80 cents a ton to Pittsburgh shipments of sheet to Chicago and New York, 60 cents a ton to Detroit, and 40 cents to Cleveland.

Except for coal and coke, lignite, and a few other products, the increase was on a straight percentage basis. Until fairly recently freight increases were limited

by hold-downs and the increase could not go over a certain amount, no matter how long the haul.

The new percentage increase works to the disadvantage of an area like Pittsburgh, which has long hauls to many markets. On shipments from Pittsburgh to New York of sheets, the rate increases 4¢ per cwt. On shipments from Bethlehem to New York the rate goes up only 1¢ per cwt. However, freight officials feel the cash increase will be fairly equal for most hauls within the eastern area.

Mills that have long hauls to markets are said to be absorbing freight on products other than plates and structurals. On oil country goods going from Pittsburgh to the Southwest, one mill is absorbing freight against East Coast producers but not against western mills.

The oil country freight picture changed several months ago. At that time, the railroads were forced to discontinue special rates to the Southwest. Without these rates, the roads were charging more than for barge shipment. The

mills continued to ship by rail, a freight manager reports, but they stopped equalizing freight against western mills.

A new electric-weld pipe mill will be put in operation by Bethlehem at Sparrows Pt., Md. The unit will turn out linepipe, standard pipe, and piling pipe with production expected to ultimately reach 240,000 tons a year. Items scheduled for production initially range in size from 5 in. through 12 in. pipe. Eventually products will include 14 and 16 in. pipe. Once the mill is in operation, two lap-weld mills at Sparrows Pt. will be dismantled.

Price News: More producers increasing stainless prices are Superior Steel Corp., and Washington Steel Corp. Keokuk Electro Metals Co. has increased silvery pig iron \$8 a ton. New price of base grade with 14.01-14.50 pct silicon is \$110 per gross ton, Keokuk. As mentioned earlier, Bethlehem Steel Co. is no longer selling merchant pig iron at Bethlehem and Steelton, Pa.

Three producers have announced increased extras. U. S. Steel made advances in certain extras for hot-rolled carbon steel strip and adjustments in extras on low alloy-high strength steel strip. Bethlehem increased extras on hot-rolled structural shapes and hot-rolled carbon steel plate. Inland Steel raised extras on hot-rolled sheets, cold-rolled sheets and enameling iron.

Product Markets: Both hot and cold-rolled sheets appear to have capacity booking for the current quarter. Demand for cold-rolled sheet has picked up and, in one Eastern market, delivery is now quoted at 8 weeks.

Hot-rolled strip is reported a little easier. Inventories are apparently high with customer apathy and holiday shutdowns decreasing activity in this product. Orders for galvanized sheet are also lagging a bit.

The situation in plate and structurals is as bad as ever. Pittsburgh area contractors report being quoted 6 to 12 months delivery on structural steel needed for big jobs.

### Purchasing Agent's Checklist

**OUTLOOK FOR 1957: Plan for another big year in metalworking** .....p. 145

**What's ahead for next five years in steel?** .....p. 157

**Include aluminum in your plans for new markets** .....p. 161

**Copper prepares for a bright future** .....p. 165

**MARKETS FOR METALWORKING: Reviews of more than thirty of the markets for metals begin on p. 203**



# Comparison of Prices

(Effective Jan. 1, 1937)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Jan. 1 1937	Dec. 25 1936	Dec. 4 1936	Jan. 4 1937
<b>Flat-Rolled Steel:</b> (per pound)				
Hot-rolled sheets	4.675¢	4.675¢	4.675¢	4.325¢
Cold-rolled sheets	5.75	5.75	5.75	5.325
Galvanized sheets (10 ga.)	6.30	6.30	6.30	5.85
Hot-rolled strip	4.675	4.675	4.675	4.325
Cold-rolled strip	6.870	6.870	6.870	6.29
Plate	4.87	4.87	4.87	4.52
Plates, wrought iron	10.40	10.40	10.40	10.40
Stainl's C-R strip (No. 302)	50.00	50.00	47.50	44.50

<b>Tin and Terneplate:</b> (per base box)				
Tinplate (1.50 lb.) cokes	\$9.95	\$9.95	\$9.95	\$9.05
Tinplates, electro (0.50 lb.)	8.65	8.65	8.65	7.75
Special coated mfg. ternes	9.20	9.20	9.20	7.85

<b>Bars and Shapes:</b> (per pound)				
Merchant bars	5.075¢	5.075¢	5.075¢	4.65¢
Cold finished bars	6.85	6.85	6.85	5.90
Alloy bars	6.125	6.125	6.125	5.65
Structural shapes	5.00	5.00	5.00	4.60
Stainless bars (No. 302)	43.25	43.25	40.75	38.25
Wrought iron bars	11.50	11.50	11.50	11.50

<b>Wire:</b> (per pound)				
Bright wire	7.20¢	7.20¢	7.20¢	6.25¢

<b>Rails:</b> (per 100 lb.)				
Heavy rails	\$5.075	\$5.075	\$5.075	\$4.725
Light rails	6.00	6.00	6.00	5.65

<b>Semifinish Steel:</b> (per net ton)				
Revering billets	\$74.00	\$74.00	\$74.00	\$68.50
Slabs, reolling	74.00	74.00	74.00	68.50
Forging billets	91.50	91.50	91.50	84.50
Alloy blooms, billets, slabs	107.00	107.00	107.00	96.00

<b>Wire Rod and Skelp:</b> (per pound)				
Wire rods	5.80¢	5.80¢	5.80¢	5.025¢
Skelp	4.225	4.225	4.225	4.225

<b>Finished Steel Composite:</b> (per pound)				
Base price	5.622¢	5.622¢	5.622¢	5.174¢

## Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

## Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

## Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Jan. 1 1937	Dec. 25 1936	Dec. 4 1936	Jan. 4 1937
<b>Pig Iron:</b> (per gross ton)				
Foundry, del'd Phila.	\$66.88	\$67.76	\$67.76	\$63.69
Foundry, Valley	63.00	63.00	63.00	59.00
Foundry, Southern Cin'ti	67.17	67.17	67.17	62.93
Foundry, Birmingham	59.00	59.00	59.00	55.00
Foundry, Chicago	63.00	63.00	63.00	59.00
Basic del'd Philadelphia	66.38	66.84	66.84	62.77
Basic Valley furnace	62.50	62.50	62.50	58.50
Malleable, Chicago	63.00	63.00	63.00	59.00
Malleable, Valley	63.00	63.00	63.00	59.00
Ferromanganese, cents per lb.	11½-12¼¢	11½-12¼¢	11.75¢	9.50¢
74 to 76 pct Mn base.				

<b>Pig Iron Composite:</b> (per gross ton)				
Pig iron	\$62.90	\$63.04	\$63.04	\$59.09

<b>Scrap:</b> (per gross ton)				
No. 1 steel, Pittsburgh	\$65.50	\$65.50	\$66.50	\$53.50
No. 1 steel, Phila. area	62.50	62.50	62.50	54.50
No. 1 steel, Chicago	62.50	62.50	66.50	51.50
No. 1 bundles, Detroit	55.00	60.50	60.50	45.50
Low phos., Youngstown	67.50	70.50	70.50	55.00
No. 1 mach'y cast, Pittsburgh	61.50	61.50	61.50	55.50
No. 1 mach'y cast, Philadel'a.	60.50	60.50	59.50	56.50
No. 1 mach'y cast, Chicago	57.50	57.50	58.50	56.50

<b>Steel Scrap Composite:</b> (per gross ton)				
No. 1 heavy melting scrap	\$63.50	\$63.50	\$65.17	\$53.33

<b>Coke, Connellsville:</b> (per net ton at oven)				
Furnace coke, prompt	\$15.50	\$15.50	\$15.50	\$14.25
Foundry coke, prompt	\$18-19	\$18-19	\$18-19	\$16.25

<b>Nonferrous Metals:</b> (cents per pound to large buyers)				
Copper, electrolytic, Conn.	36.00	36.00	40.00	43.00
Copper, Lake, Conn.	36.00	36.00	40.00	43.00
Tin, Straits, New York	101.00	102.25	110.50	107.75
Zinc, East St. Louis	13.50	13.50	13.50	13.00
Lead, St. Louis	15.80	15.80	15.80	15.80
Aluminum, virgin ingot	27.10	27.10	27.10	24.40
Nickel, electrolytic	74.00	74.00*	64.50	64.50
Magnesium, ingot	36.00	36.00	36.00	33.25
Antimony, Laredo, Tex.	33.00	33.00	33.00	33.00

† Tentative. ‡ Average. \* Revised.

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

## STAINLESS STEEL

Base price cents per lb. f.o.b. mill

← To identify producers, see Key on P. 372 →

Producing Point	Basic	Fdry.	Mall.	Beas.	Low Phos.
Birdsboro, Pa. B6	64.50	65.00	65.50	66.00	.....
Birmingham R3	58.50	59.00*	.....	.....	.....
Birmingham W9	58.50	59.00*	63.00	.....	.....
Birmingham U9	58.50	59.00*	63.00	.....	.....
Buffalo R3	62.50	63.00	63.50	64.00	.....
Buffalo H1	62.50	63.00	63.50	.....	.....
Buffalo W6	62.50	63.00	63.50	64.00	.....
Chester P2	64.50	65.00	65.50	.....	.....
Chicago I4	62.50	63.00	63.00	63.50	.....
Cleveland A5	62.50	63.00	63.00	63.50	67.50†
Cleveland R3	62.50	63.00	63.00	63.50	.....
Duluth I4	62.50	63.00	63.00	63.50	67.50†
Erie I4	62.50	63.00	63.00	63.50	67.50†
Everett M6	.....	63.75	64.25	.....	.....
Fentona K1	70.00	70.50	.....	.....	.....
Geneva, Utah C7	62.50	63.00	.....	.....	.....
Granite City G2	64.40	64.90	65.40	.....	.....
Hubbard Y1	.....	.....	63.00	.....	.....
Lone Star L3	58.50†	59.00†	.....	.....	.....
Midland C11	62.50	.....	65.50	.....	.....
Minnequa C6	64.50	.....	.....	.....	.....
Monessen P6	62.50	.....	.....	.....	.....
Neville Ia. P4	62.50	63.00	63.00	63.50	67.50†
N. Tonawanda T1	.....	63.00	63.50	64.00	.....
Pittsburgh U1	62.50	.....	63.00	63.50	.....
Sharpville S3	62.50	63.00	63.00	63.50	.....
So. Chicago R3	62.50	63.00	63.00	.....	.....
Swedeland A2	64.50	65.00	65.50	66.00	.....
Toledo I4	62.50	63.00	63.00	63.50	.....
Troy, N. Y. R3	64.50	65.00	65.50	66.00	.....
Youngstown Y1	.....	63.00	63.50	.....	.....

**DIFFERENTIALS:** Add, 50¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. \* Add \$1.00 for 0.31-0.69 pct phos. † Intermediate low phos. ‡ Add \$1.00 for 0.31 to 0.50 pct phos.

**Silvery Iron:** Buffalo, H1, \$72.50; Jackson, J1, I4 (Globe Div.), \$71.50; Niagara Falls (15.01-15.50), \$39.50; Keokuk (14.01-14.50), \$110.00; (15.51-16.00), \$105.00. Add \$1.25 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 14 pct. Add 75¢ for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.), \$64.00. Add \$1.00 premium for all grades silvery 6 pct to 14 pct.

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingot, reroll.	21.25	22.75	22.25	24.25	—	26.00	38.25	31.00	35.50	—	16.00	27.75	16.25
Slabs, billets	26.00	29.00	27.00	30.25	30.75	32.00	47.50	38.50	44.75	—	20.75	—	21.00
Billets, forging	—	35.00	35.75	36.50	39.50	39.00	59.75	45.25	53.50	30.75	27.25	27.75	27.75
Bars, struct.	—	41.25	42.50	43.25	46.25	46.00	70.25	53.25	62.25	36.25	32.50	33.00	33.60
Plates	—	43.25	44.50	45.50	48.60	48.75	73.75	57.50	67.00	38.75	33.75	35.50	34.50
Sheets	46.75	47.25	49.25	50.00	—	53.25	78.25	63.00	76.25	46.50	38.75	46.50	39.25
Strip, hot-rolled	34.50	37.50	35.75	39.00	—	42.50	66.50	51.50	61.00	—	29.75	—	30.75
Strip, cold-rolled	43.25	47.25	45.75	50.00	—	53.25	78.25	63.00	76.25	46.50	38.75	46.50	39.25
Wire CF; Rod HR	—	39.25	40.25	41.00	44.00	43.75	66.75	50.50	59.25	34.50	31.00	31.50	31.50
			40.50	41.25			67.00	51.00	59.50				

## STAINLESS STEEL PRODUCING POINTS:

**Sheets:** Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J3; Baltimore, Md., E1; Middletown, O., A7; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, Ind., J4; Philadelphia, D5.

**Strip:** Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; S. Chicago, Ind., U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, Ind., A5; Canton, O., T3; Ft. Wayne, Ind., I4; Philadelphia, D5; Detroit, R5; Gary, Ind., U1.

**Wire:** Waukegan, Ind., A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind., J4; Harrison, N. J., D3; Baltimore, Md., E1; Dunkirk, N. Y., A3; Monessen, Pa., U1; Syracuse, Ind., C11; Bridgeville, Pa., U2.

**Structurals:** Baltimore, Md., A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, Ind., C11; S. Chicago, Ind., U1.

**Plates:** Brackenridge, Pa., A3; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, Ind., A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Philadelphia, D5; Vandergrift, Pa., U1; Gary, Ind., U1.

**Forging billets:** Midland, Pa., C11; Baltimore, Md., A7; Washington, Pa., J2; McKeesport, Pa., F1; Massillon, Canton, O., R3; Watervliet, Ind., A5; Pittsburgh, Chicago, Ind., U1; Syracuse, Ind., C11; Detroit, R5; Munhall, Pa., S. Chicago, Ind., U1.

## Is the Market Really Soft?

**Sharp drop in automotive lists indicates weakening market . . . Other markets resist softening influence for the moment . . . Dealer market has to be tested.**

♦ **SLUMPING** automotive list prices in Detroit and other automotive centers may have done what previous mill resistance failed to do—make a significant break in the scrap price structure.

Lists in Detroit were from \$5 to \$6 under last month. Record tonnages offered by the booming auto plants did not arouse much competitive bidding. No. 1 auto list bundles averaged \$61.25.

Immediate result is a major drop in Detroit in sympathy. Other markets did not react as strongly. But the influence will be felt when the dealer market is tested, if not before.

In the East, export continued to peg the market at its present levels, although declines were registered in New England, where export is falling off.

In the Midwest, closing automotive lists were bringing lower prices. In Chicago, where mill resistance to record high prices was most determined, the downward slide of primary grades was halted, at least temporarily. In the Windy City, lower prices for some No. 2 sales were offset by continued activity at the higher level.

Good grades of scrap are still not in plentiful supply. This situation, coupled with continued high mill operating rate and a possible ore shortage, guarantees a strong market through most of the winter.

Possibility of decline of export could result in lower prices in the East, but this has not yet occurred.

**Pittsburgh . . .** The market here is in a fluid state. One mill recently bought openhearth scrap at prices \$1 to \$2 under the last figure. Another is talking about paying \$2 to \$3 un-

der the last purchase. No. 2 bundles are reportedly more plentiful and small tonnages have been bought for as little as \$51. However, good scrap is still scarce and a new order by a major mill could have the effect of firming the market. Low phos activity continues to lag, but scattered buys confirm the present price. Brokers report strong competition for available supplies.

**Chicago . . .** Scrap continues to move in heavy tonnages to area mills, mainly on orders written at stronger price levels at the beginning of December. Brokers are attempting to move into a slightly long position where available scrap permits. New sales to mills were bringing out only very small quantities of scrap and dealer stocks continue low. A 1000-ton order for No. 2 heavy melting and No. 2 dealer bundles went at \$51 and \$46 respectively, although broker buying at higher levels was reported. Activity in cast indicates a mild upswing.

**Philadelphia . . .** Two carloads of export for early January shipment are now being accumulated here. They are having the effect of holding the market at its present price levels. However, without the export factor, a tone of weakness is noted. No. 2 orders are less frequent, not of the size that might be hoped for by the trade. Meanwhile, holiday routine prevailed, with little activity on the domestic front to disturb the market level.

**New York . . .** Brokers have cut buying prices \$1 for steelmaking grades, as much as \$2 for turnings and \$1 for some cast grades on the basis of their belief that the next mill orders will be at lower prices. Higher freight rates in 1957 to Pennsylvania mills is also adding pressure for some price trimming.

**Detroit . . .** Prices fell generally here in bidding on the January auto lists. Softness of the market was a

further reflection of weakening in other areas. Major causes for the drop are stubborn mill resistance to high prices and record high tonnages of industrial scrap. No. 1 list bundles averaged about \$61.25.

**Cleveland . . .** Prices are off \$1 in the Valley and \$1.50 in Cleveland for No. 1 heavy melting following a purchase by a fringe mill at \$67. In Cleveland, additional small tonnage of No. 1 heavy melting was purchased earlier at \$65. Auto production lists are closing at \$4 to \$5 a ton under last month and mills are blowing the whistle on high-priced factory lists. No. 2 bundles are slow in moving and most going to Pittsburgh.

**Birmingham . . .** The market continues slow in this area with very little buying the last two weeks and continued quiet over the holidays. Some pipe companies remained closed all week, cutting immediate demand. One large pig iron producer has been closed by a strike extending two months, with no progress reported toward ending it. Despite this, pig iron seems to be plentiful. Others are operating at or near capacity.

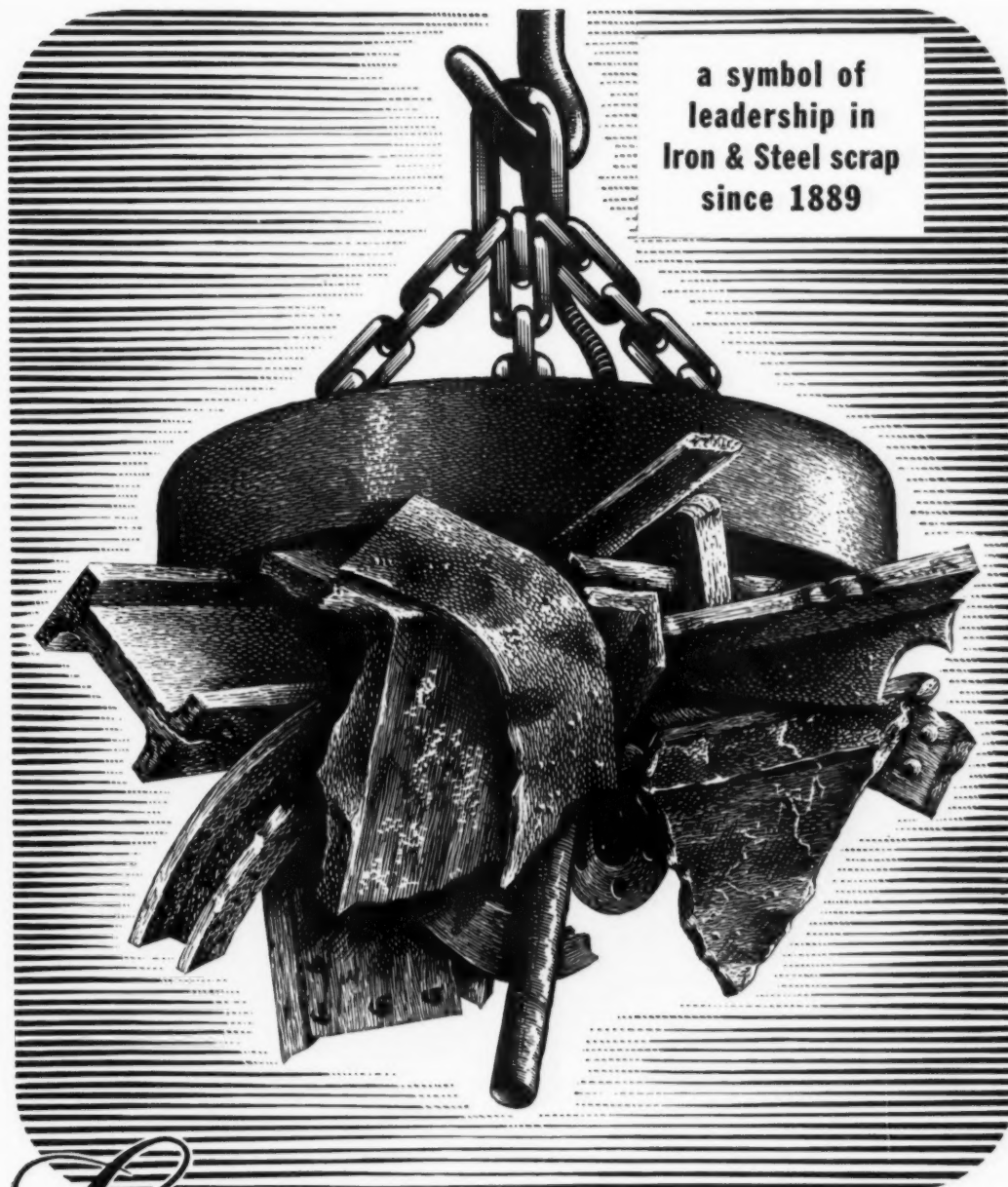
**St. Louis . . .** Due to a partial holiday shutdown, some furnaces are down for a short interval. The usual holiday dullness prevails with movement curtailed because of inventory control to keep stocks down until after Jan. 1.

**Cincinnati . . .** Price is off \$1 on steelmaking grades on appraisal. Dealers have been shipping heavily to get earlier price in anticipation of a drop or to avoid cancellation. Price declines in automotive lists also indicate a decline in area production lists.

**Buffalo . . .** The feeling of weakness in this market continues. But there have been no new sales to change the immediate picture. Dealer inventories are at a record low. Shipping on the Great Lakes has halted, but mills are believed to have ample inventories for most of the winter.

**Boston . . .** The market continued to decline for the second successive week. Openhearth grades dropped \$1 on the basis of a sale of No. 1 grades. Export is slow, domestic demand sluggish at the moment. Unstripped motor blocks cannot find a market.

**West Coast . . .** The quiet tone that has prevailed in this market continues. Mills are encountering no trouble in getting their requirements. Export is still strong.



a symbol of  
leadership in  
Iron & Steel scrap  
since 1889

# *Luria Brothers and Company, Inc.*

**MAIN OFFICE**  
**PHILADELPHIA NATIONAL BANK BLDG.**  
Philadelphia 7, Penna.

**PLANTS**  
LEBANON, PENNA. DETROIT (ECORSE),  
READING, PENNA. MICHIGAN  
MODENA, PENNA. PITTSBURGH, PENNA.  
ERIE, PENNA.

**OFFICES**  
BIRMINGHAM, ALA. DETROIT, MICH. PUEBLO, COLORADO  
BOSTON, MASS. HOUSTON, TEXAS READING, PENNA.  
BUFFALO, N. Y. LEBANON, PENNA. ST. LOUIS, MO.  
CHICAGO, ILLINOIS LOS ANGELES, CAL. SAN FRANCISCO, CAL.  
CLEVELAND, OHIO NEW YORK, N. Y. SEATTLE, WASH.  
PITTSBURGH, PA.

*in Canada* MONTREAL, QUEBEC — HAMILTON, ONTARIO

**EXPORTS-IMPORTS LIVINGSTON & SOUTHARD, INC. 99 Park Ave., New York, N. Y. Cable Address: FORENTRACO**

January 3, 1957

363

# Scrap Prices (Effective Jan. 1, 1957)

## Pittsburgh

No. 1 hvy. melting	\$65.00 to \$66.00
No. 2 hvy. melting	55.00 to 57.00
No. 1 dealer bundles	65.00 to 66.00
No. 1 factory bundles	71.00 to 72.00
No. 2 bundles	51.00 to 52.00
Machine shop turn.	43.00 to 44.00
Mixed bor. and ms. turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Low phos. punch'g plate	73.00 to 74.00
Heavy turnings	58.00 to 59.00
No. 1 RR hvy. melting	71.00 to 72.00
Scrap rails, random lgth.	79.00 to 80.00
Rails 2 ft and under	83.00 to 84.00
RR steel wheels	75.00 to 76.00
RR couplers and knuckles	75.00 to 76.00
No. 1 machinery cast.	61.00 to 62.00
Cupola cast.	54.00 to 55.00
Heavy breakable cast.	52.00 to 53.00

## Chicago

No. 1 hvy. melting	\$62.00 to \$63.00
No. 2 hvy. melting	51.00 to 53.00
No. 1 dealer bundles	63.00 to 64.00
No. 1 factory bundles	69.00 to 70.00
No. 2 bundles	46.00 to 48.00
Machine shop turn.	39.00 to 40.00
Mixed bor. and turn.	41.00 to 42.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	41.00 to 42.00
Low phos. forge crops	72.00 to 73.00
Low phos. punch'g plate	69.00 to 70.00
Low phos. 3 ft and under	67.00 to 68.00
No. 1 RR hvy. melting	69.00 to 70.00
Scrap rails, random lgth.	82.00 to 83.00
Rerolling rails	92.00 to 93.00
Rails 2 ft and under	88.00 to 89.00
Locomotive tires, cut	72.00 to 73.00
Cut bolsters & side frames	72.00 to 73.00
Angles and splice bars	77.00 to 78.00
RR steel car axles	91.00 to 92.00
RR couplers and knuckles	91.00 to 92.00
No. 1 machinery cast.	57.00 to 58.00
Cupola cast.	52.00 to 53.00
Heavy breakable cast.	51.00 to 52.00
Cast iron brake shoe	49.00 to 50.00
Cast iron wheels	58.00 to 59.00
Malleable	72.00 to 73.00
Stove plate	49.00 to 50.00
Steel car wheels	72.00 to 73.00

## Philadelphia Area

No. 1 hvy. melting	\$62.00 to \$63.00
No. 2 hvy. melting	53.00 to 56.00
No. 1 dealer bundles	63.00 to 64.00
No. 2 bundles	51.00 to 53.00
Machine shop turn.	45.00 to 46.00
Mixed bor. short turn.	45.00 to 46.00
Cast iron borings	45.00 to 46.00
Shoveling turnings	48.00 to 49.00
Clean cast chem. borings	51.00 to 52.00
Low phos. 5 ft and under	67.00 to 68.00
Low phos. 2 ft and under	69.00 to 70.00
Low phos. punch'g	69.00 to 70.00
Elec. furnace bundles	64.00 to 65.00
Heavy turnings	58.00 to 59.00
RR steel wheels	73.00 to 74.00
RR spring steel	73.00 to 74.00
Rails 18 in. and under	81.00 to 82.00
Cupola cast.	55.00 to 56.00
Heavy breakable cast.	58.00 to 59.00
Cast iron car wheels	64.00 to 65.00
Malleable	68.00 to 69.00
Unstripped motor blocks	44.00 to 45.00
No. 1 machinery cast.	60.00 to 61.00

## Cleveland

No. 1 hvy. melting	\$63.00 to \$64.00
No. 2 hvy. melting	55.00 to 56.00
No. 1 dealer bundles	63.00 to 64.00
No. 1 factory bundles	67.00 to 68.00
No. 2 bundles	44.00 to 45.00
No. 1 busheling	63.00 to 64.00
Machine shop turn.	35.00 to 36.00
Mixed bor. and turn.	39.00 to 40.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	39.00 to 40.00
Cut struct'l & plates, 2 ft. & under	67.00 to 68.00
Drop forge flashings	63.00 to 64.00
Low phos. punch'g, plate	64.00 to 65.00
Foundry steel, 2 ft & under	59.00 to 60.00
No. 1 RR heavy melting	69.00 to 70.00
Rails 2 ft and under	83.00 to 84.00
Rails 18 in. and under	84.00 to 85.00
Railroad grate bars	49.00 to 50.00
Steel axle turnings	44.00 to 45.00
Railroad cast.	61.00 to 62.00
No. 1 machinery cast.	60.00 to 61.00
Stove plate	54.00 to 55.00
Malleable	71.00 to 72.00

## Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

## Youngstown

No. 1 hvy. melting	\$66.00 to \$67.00
No. 2 hvy. melting	58.00 to 59.00
No. 1 dealer bundles	66.00 to 67.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	35.00 to 36.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	40.00 to 41.00
Low phos. plate	67.00 to 68.00

## Buffalo

No. 1 hvy. melting	\$60.00 to \$61.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	60.00 to 61.00
No. 1 dealer bundles	60.00 to 61.00
No. 2 bundles	45.00 to 46.00
Machine shop turn.	34.00 to 35.00
Mixed bor. and turn.	38.00 to 39.00
Shoveling turnings	37.00 to 38.00
Cast iron borings	35.00 to 36.00
Low phos. plate	65.00 to 66.00
Scrap rails, random lgth.	63.00 to 64.00
Rails 2 ft and under	79.00 to 80.00
RR steel wheels	65.00 to 66.00
RR spring steel	60.00 to 61.00
RR couplers and knuckles	74.00 to 75.00
No. 1 machinery cast.	54.00 to 55.00
No. 1 cupola cast.	48.00 to 49.00

## Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$54.50 to \$55.50
No. 2 hvy. melting	50.00 to 50.00
No. 1 dealer bundles	55.50 to 56.50
No. 2 bundles	39.00 to 40.00
New busheling	54.50 to 55.50
Drop forge flashings	54.00 to 55.00
Machine shop turn.	29.00 to 30.00
Mixed bor. and turn.	32.00 to 33.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	32.00 to 33.00
Low phos. punch'g, plate	53.50 to 54.50
No. 1 cupola cast.	51.00 to 52.00
Heavy breakable cast.	44.00 to 45.00
Stove plate	45.00 to 46.00
Automotive cast.	54.00 to 55.00

## St. Louis

No. 1 hvy. melting	\$55.00 to \$56.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 dealer bundles	58.00 to 59.00
No. 2 bundles	44.00 to 45.00
Machine shop turn.	38.00 to 39.00
Cast iron borings	40.00 to 41.00
Shoveling turnings	40.00 to 41.00
No. 1 RR hvy. melting	66.00 to 67.00
Rails, random lengths	78.00 to 79.00
Rails 18 in. and under	86.00 to 87.00
Locomotive tires uncut	68.00 to 69.00
Angles and splice bars	70.00 to 71.00
Std. steel car axles	55.00 to 56.00
RR specialties	70.00 to 71.00
Cupola cast.	51.00 to 52.00
Heavy breakable cast.	46.50 to 47.50
Cast iron brake shoes	54.00 to 55.00
Stove plate	44.00 to 45.00
Cast iron car wheels	56.00 to 57.00
Rerolling rails	84.00 to 85.00
Unstripped motor blocks	45.50 to 46.50

## Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$51.00 to \$52.00
No. 2 hvy. melting	40.00 to 41.00
No. 1 dealer bundles	51.00 to 52.00
No. 2 bundles	39.50 to 40.50
No. 1 busheling	52.00 to 53.00
Elec. furnace, 3 ft & under	54.00 to 55.00
Machine shop turn.	32.00 to 33.00
Mixed bor. and short turn.	34.00 to 35.00
Shoveling turnings	37.00 to 38.00
Clean cast chem. borings	37.00 to 38.00
No. 1 machinery cast.	47.00 to 48.00
Mixed cupola cast.	43.00 to 44.00
Heavy breakable cast.	45.00 to 46.00
Stove plate	41.00 to 42.00
Unstripped motor blocks	33.00 to 34.00

## New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$56.00 to \$57.00
No. 2 hvy. melting	48.00 to 49.00
No. 2 dealer bundles	46.00 to 47.00
Machine shop turn.	36.00 to 37.00
Mixed bor. and turn.	39.00 to 40.00
Shoveling turnings	40.00 to 41.00
Clean cast chem. borings	55.00 to 56.00
No. 1 machinery cast.	51.00 to 52.00
Mixed yard cast.	51.00 to 52.00
Charging box cast.	51.00 to 52.00
Heavy breakable cast.	52.00 to 53.00
Unstripped motor blocks	41.00 to 42.00

## Birmingham

No. 1 hvy. melting	\$46.00 to \$47.00
No. 2 hvy. melting	44.00 to 45.00
No. 1 dealer bundles	46.00 to 47.00
No. 2 bundles	38.00 to 39.00
No. 1 busheling	46.00 to 47.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	40.00 to 41.00
Cast iron borings	27.00 to 28.00
Electric furnace bundles	56.00 to 57.00
Bar crops and plate	64.00 to 65.00
Structural and plate, 2 ft.	63.00 to 64.00
Scrap rails, random lgth.	63.00 to 64.00
Rails, 18 in. and under	76.00 to 77.00
Angles & splice bars	68.00 to 69.00
Rerolling rails	82.00 to 83.00
No. 1 cupola cast.	52.00 to 53.00
Stove plate	51.00 to 52.00
Unstripped motor blocks	40.00 to 41.00
Charging box cast.	45.00 to 46.00
Cast iron car wheels	44.00 to 45.00
Mashed tin cans	15.00 to 16.00
Elec. furnace, 2 ft & under	54.00 to 55.00

## Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$61.00 to \$62.00
No. 2 hvy. melting	52.00 to 53.00
No. 1 dealer bundles	61.00 to 62.00
No. 2 bundles	45.00 to 46.00
Machine shop turn.	41.00 to 42.00
Mixed bor. and turn.	40.00 to 41.00
Shoveling turnings	43.00 to 44.00
Cast iron borings	40.00 to 41.00
Low phos. 18 in. & under	68.00 to 69.00
Rails, random lengths	75.00 to 76.00
Rails, 18 in. and under	81.00 to 82.00
No. 2 cupola cast.	48.00 to 49.00
Hvy. breakable cast.	47.00 to 48.00
Drop broken cast.	59.00 to 60.00

## San Francisco

No. 1 hvy. melting	\$55.00
No. 2 hvy. melting	52.00
No. 1 dealer bundles	54.00
No. 2 bundles	40.00
Machine shop turn.	35.00
Cast iron borings	35.00
No. 1 RR hvy. melting	55.00
No. 1 cupola cast.	57.00

## Los Angeles

No. 1 hvy. melting	\$54.00
No. 2 hvy. melting	52.00
No. 1 dealer bundles	53.00
No. 2 bundles	38.00
Machine shop turn.	35.00
Shoveling turnings	38.00
Cast iron borings	35.00
Elec. furn. 1 ft. and under (foundry)	66.00
No. 1 RR hvy. melting	54.00
No. 1 cupola cast.	56.00

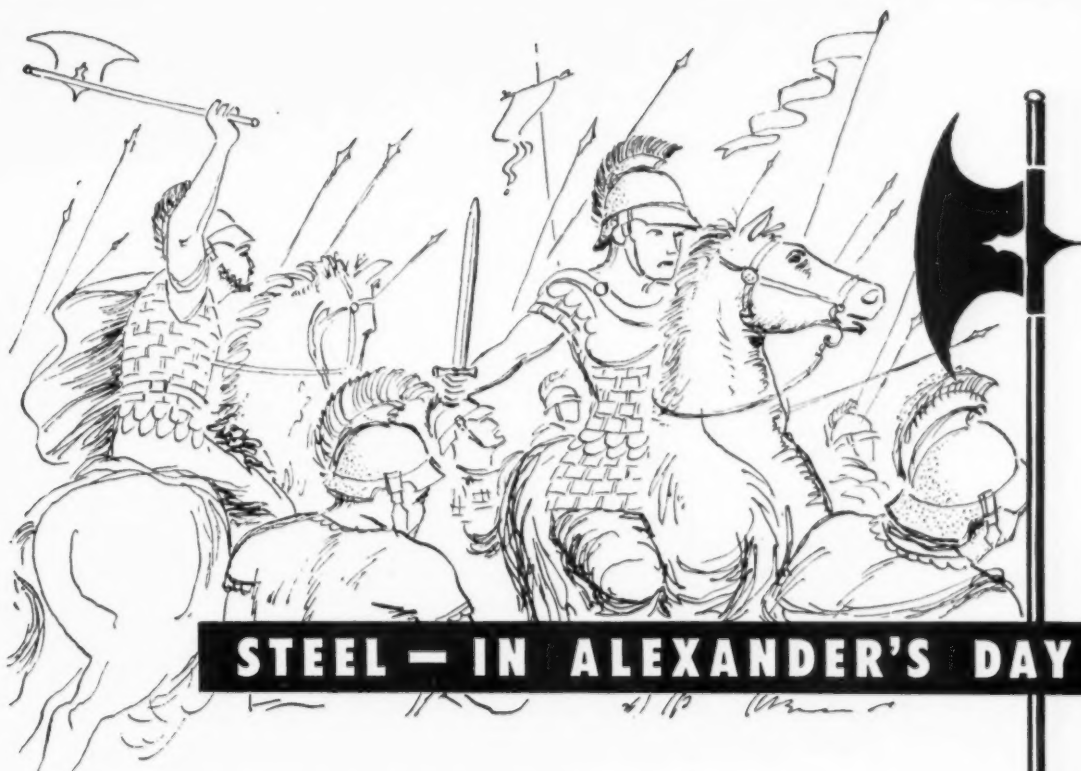
## Seattle

No. 1 hvy. melting	\$54.00
No. 2 hvy. melting	51.00
No. 2 bundles	\$33.00 to 35.00
No. 1 cupola cast.	55.00
Mixed yard cast.	55.00

## Hamilton, Ont.

No. 1 hvy. melting	\$54.00
No. 2 hvy. melting	47.00
No. 1 dealer bundles	54.00
No. 2 bundles	40.50
Mixed steel scrap	46.00
Bushings	29.50
Bush, new fact, prep'd	52.00
Bush, new fact, unprep'd	48.00
Machine shop turn.	31.00
Short steel turn.	35.00
Mixed bor. and turn.	28.00
Rails, rerolling	60.00
Cast scrap	50.00





## STEEL — IN ALEXANDER'S DAY

When the armies of Alexander the Great defeated the Persians at Arbela in 331 B.C., steel already had its specialized uses.

According to Daimachus, a writer of the fourth century B.C., Chalybdic and Synoptic steels were used for ordinary tools;

Lydian for swords, razors and surgical instruments;

Lacedaemonian for files, augers, chisels and stone-cutting implements.

Today, steel requirements for specialized purposes are far more extensive—for implements and tools—for agriculture, industry, construction, transportation and defense. Scrap, in millions of tons, is required to maintain the continuity of our vitally important steel production.

***For the purchase or sale of iron or steel scrap...***

***phone or write "Your Chicago Broker"***



*231 S. La Salle St., Chicago*

*Telephone ANdover 3-3900*

# Prices Will Hold The Line

**Production caught up with demand in 1956 . . . Means that most major metals will feature stable price situation in 1957 . . . Changes will be fewer, less drastic.**

♦ EXCEPT FOR the uncertainties of international relations, nonferrous consumers can look ahead to a year of stable prices and better supply. It's a welcome change from hectic 1956 when prices fluctuated wildly and labor unrest clouded the supply outlook.

Long term labor contracts in many nonferrous industries assure wage increases in 1957. In almost all cases it will mean an orderly price increase.

As the new year began, demand was level with or below supply. The trend in prices had long since leveled off. In fact, two of the major metals finished '56 at a lower price than they finished '55. And several others were just  $\frac{1}{2}$ ¢ higher.

Here's the picture:

	1955	1956
	(¢ per lb)	
aluminum (ingot)	24.40	27.10
copper	43.00	36.00
zinc	13.00	13.50
lead	15.30	15.80
tin	107.00	101.00
magnesium (ingot)	32.50	36.00

A metal-by-metal rundown shows the following:

**Aluminum**—Continued stability in price and supply. The three-year labor contract means a year of continued operation, and possibly a new production record. But, it also means a wage increase in August. This is sure to bump the price  $\frac{1}{2}$ ¢ to 1¢ per lb.

**Copper**—Production is easily out-distancing demand, with almost no chance of a basic change in the situation. Primary copper price may well hold the line through the entire year. Biggest chance of an increase is during the summer when workers will get a raise.

**Zinc**—Production and imports easily top civilian demand. U. S. government will continue to balance the market. Just one price increase in the cards for 1957, probably before the year is half over.

**Lead**—Nineteen fifty-six was a good year, 1957 will be just as good. But production and imports will easily balance demand. One price increase probable to cover increased costs.

**Tin**—Most susceptible to fluctuation because of the long supply line. However, there is enough to go around and the average price in 1957 will be less than \$1.00 per lb.

**Magnesium**—With another producer scheduled to begin operations, there will be enough production to meet demand. Outlook is for continued price stability.

## Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum ingot	27.10	25.90	8/10/56
Aluminum pig	25.00	24.00	8/10/56
Copper (E)	36.00	40.00	10/26/56
Copper (CS)	35.00	35.50	12/20/56
Copper (L)	36.00	40.00	10/27/56
Lead, E. St. L.	16.80	16.30	1/13/56
Lead, N. Y.	16.00	16.50	1/13/56
Magnesium ingot	36.00	34.50	5/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	250-275	270-300	12/4/56
Zinc, E. St. L.	13.50	13.00	1/8/56
Zinc, N. Y.	14.00	13.80	1/8/56

**ALUMINUM:** 99% ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic, (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig. Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see column at right, other primary prices, pg. 368.

Price increase probable about August to cover increased labor costs.

**TIN . . .** The Federal Facilities Corp. completed negotiations for the sale of the Texas City tin smelter Dec. 27. But identity of the buyer was held up until contracts have been signed.

There were only two bidders, Wah Chang Corp., a New York metals firm; and an unidentified group from the West Coast. Best bet is that the Wah Chang bid will be accepted.

A Wah Chang spokesman indicates plans for the smelter are general, but would be made more specific if and when its bid is accepted.

The price of the metal continues to slide, as ships taking the longer routes bypassing the Suez Canal begin to arrive regularly. The Malayan Tin Bureau quotes an authoritative source that only 150 long tons of tin consigned to the U. S. were caught in the Canal. And even this has been rerouted and is on its way.

Statistics from the International Tin Study Group indicate a slight tightening of the market in 1956, but no basic change. Mine production was 163,000 long tons, down from the 168,500 long tons in 1955. However, both smelter production for industrial use, and consumption were up.

**MAGNESIUM . . .** Magnesium Assn. reports shipments of magnesium castings for the month of October 1956 totaled 1722 tons, up over both the 1540 tons shipped the previous month and 1151 tons shipped October of 1955.

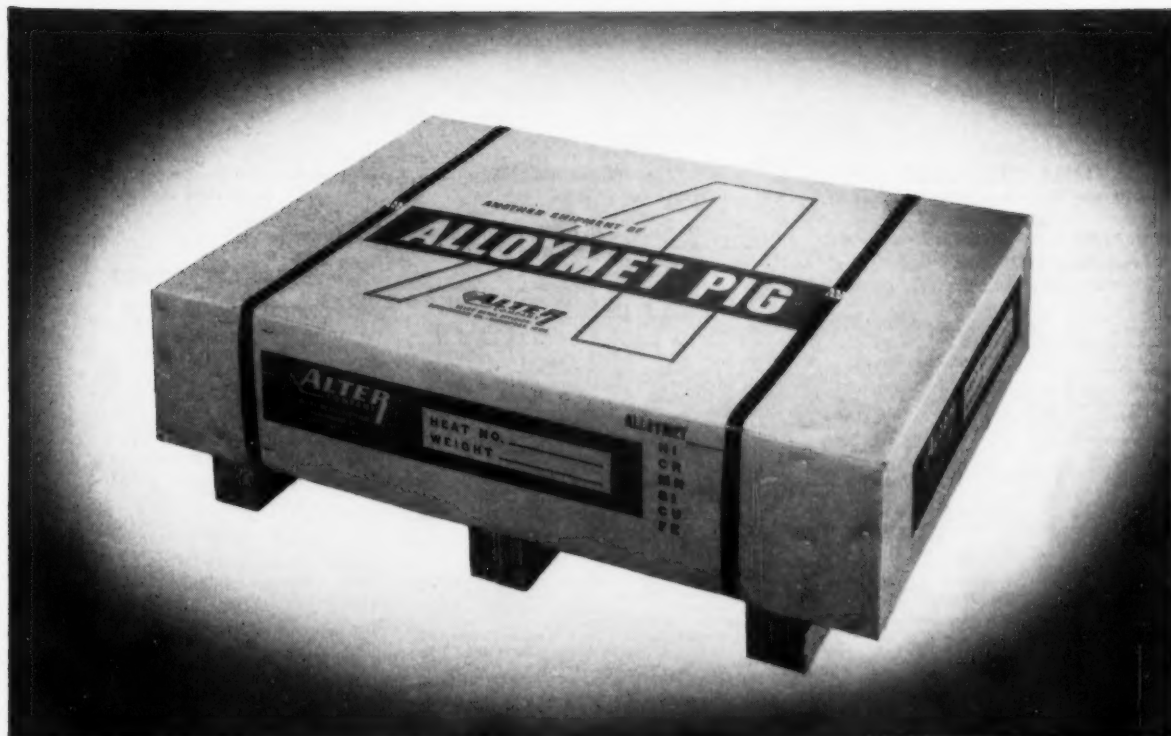
All of the major types of magnesium castings with the exception of anodes registered noticeable increases. Sand castings shipments hit 805 tons from the 646 tons shipped in September. Permanent mold castings were up to 156 tons from 107 tons.

**COPPER . . .** The Copper and Brass Research Assn. predicts free world mine capacity will reach 4 million tons by 1962. Current output is about 3 million tons.

In addition to this, potential capacity in Canada, Africa, and South America could boost this estimate by 100,000 tons. However, development of new properties is costly. The Bureau of Mines says new mining, milling, and smelting capacity in the U. S. costs between \$1500 and \$2000 per ton—and higher outside the U. S.

Tin prices for the week: Dec. 26—101.25; Dec. 27—101.00; Dec. 28—101.00\*; Dec. 31—101.00.\*

\*Estimate.



## NEW "BOX LUNCH" of NICKEL ALLOY speeds feeding of electric furnaces

26 nickel alloy pigs, each weighing about 50 pounds, travel inside this new palletized package. Weight and certified analysis are in plain view at all times. All fiberboard, it can go into the electric furnace "as is." It weighs only  $\frac{1}{4}$  as much as a wooden pallet. Saves on transportation costs. Discourages pilferage. Speeds handling.

Users are already enthusiastic about this new nickel alloy package. Like the quality product it contains, it serves as a further example of the exacting care Alter Company exercises in every phase of the production of alloy metals.

If you are still using scrap for your alloy requirements, ask us about Alloymet pig of certified analysis.



PHONE 6-2561 • TELETYPE DV 588

ALLOY METAL DIVISION  
1701 ROCKINGHAM ROAD  
DAVENPORT, IOWA

**World's largest producer of secondary nickel alloys of certified analysis**

# Nonferrous Prices (Effective Jan. 1, 1957)

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

#### Flat Sheet (Mill Finish) and Plate ("P" temper except 6061-0)

Alloy	.032	.081	.136- .249	.250- 3
1800, 1100,				
3003.....	44.3	42.1	40.9	40.2
5052.....	51.8	46.8	45.1	42.9
6061-0.....	48.9	44.6	42.8	42.6

#### Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8.....	45.5-47.3	61.3-65.1
12-14.....	46.2-47.7	62.2-66.8
24-26.....	49.4-49.5	73.1-77.8
36-38.....	58.3-59.0	97.4-101.0

#### Screw Machine Stock—2011-T-3

Size*	3/4	5/8-5/8	3/4-1	1 1/4-1 1/2
Price	59.7	58.8	57.4	55.2

#### Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length*→	72	96	120	144
.019 gage.....	\$1.352	\$1.803	\$2.254	\$2.704
.024 gage.....	1.686	2.252	2.815	3.378

### MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

#### Sheet and Plate

Type→	Gage→	250 3.00	250 2.00	.188	.081	.032
AZ31B Stand, Grade.....		67.9	69.0	77.9	103.1	
AZ31B Spec. .....		93.3	95.7	108.7	171.3	
Tread Plate.....		70.6	71.7			
Tooling Plate.....		73.0				

#### Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C).....	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B).....	84.6	85.7	90.6	104.2

#### Alloy Ingot

AZ91B (Die Casting)..... 37.25 (delivered)  
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velsco, Tex.)

### NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

"A" Nickel Monel Inconel			
Sheet, CR.....	113	97	118
Strip, CR.....	111	99	128
Rod, bar, HR.....	94	80	99
Angles, HR.....	94	80	99
Plates, HR.....	107	96	111
Seamless tube.....	144	120	190
Shot, blocks.....		78	

## COPPER, BRASS, BRONZE

(Freight included on 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper.....	58.13	.....	55.36	58.32
Brass, 70/30.....	50.19	50.73	50.13	53.10
Brass, Low.....	53.40	53.94	53.34	56.21
Brass, R.L.....	54.54	55.08	54.48	57.35
Brass, Naval.....	54.14	.....	48.45	57.55
Muntz Metal.....	52.19	.....	48.00	.....
Comm. Bz.....	56.23	56.77	56.17	58.75
Mang. Bz.....	57.88	.....	51.98	.....
Phos. Bz. 5%.....	77.25	.....	77.25	.....

### TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, \$11.00-\$12.10; alloy, \$14.75; Plate, HR, commercially pure, \$9.25-\$9.75; alloy, \$11.25. Wire, rolled and/or drawn, commercially pure, \$8.50-\$9.00; alloy, \$11.00; Bar, HR or forged, commercially pure, \$7.10-\$7.35; alloy, \$7.10-\$7.30; billets, HR, commercially pure, \$6.85-\$7.10; alloy, \$6.85-\$7.05.

### PRIMARY METAL

(Cents per lb, unless otherwise noted)  
Antimony, American, Laredo, Tex... 33.50  
Beryllium aluminum 5% Be, Dollar  
per lb contained Be.....\$74.75  
Beryllium copper, per lb contain'd Be.....\$43.00  
Beryllium 97% lump or beads,  
f.o.b. Cleveland, Reading.....\$71.50  
Bismuth, ton lots.....\$ 2.25  
Cadmium, del'd.....\$ 1.70  
Calcium, 99.9%, small lots.....\$ 4.55  
Chromium, 99.8% metallic basis.....\$ 1.31  
Cobalt, 97-99% (per lb).....\$2.35 to \$2.43  
Germanium, per gm, f.o.b. Miami,  
Okla., refined.....\$48.50  
Gold, U. S. Treas., per troy oz.....\$35.00  
Indium, 99.9% dollars per troy oz.....\$ 2.25  
Iridium, dollars per troy oz.....\$90 to \$100  
Lithium, 98%.....\$11.00 to \$14.00  
Magnesium, sticks, 100 to 500 lb..... 59.00  
Mercury, dollars per 76-lb flask,  
f.o.b. New York.....\$255 to \$257  
Nickel oxide sinter at Copper..... 71.25  
Cliff. Ont., contained nickel.....\$23 to \$24  
Palladium, dollars per troy oz.....\$103 to \$105  
Platinum, dollars per troy oz.....\$120.00 to \$125.00  
Rhodium..... 91.375  
Silver ingots (\$ per troy oz).....\$43.00  
Thorium, per kg.....\$40.00  
Uranium, normal per kg.....\$ 3.45  
Vanadium.....\$10.00  
Zirconium sponge.....\$3.40

### REMELTED METALS

#### Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot	
No. 115.....	35.00
No. 120.....	33.75
No. 123.....	32.25
80-10-10 ingot	
No. 305.....	38.50
No. 315.....	36.75
88-10-2 ingot	
No. 210.....	48.75
No. 215.....	44.50
No. 245.....	40.00
Yellow ingot	
No. 405.....	27.50
Manganese bronze	
No. 421.....	30.75

#### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper max.....	26.25-27.00
0.60 copper max.....	26.00-26.75
Piston alloys (No. 122 type).....	26.00-26.75
No. 12 alum. (No. 2 grade).....	23.75-25.00
108 alloy.....	24.00-25.00
195 alloy.....	26.50-27.00
13 alloy (0.60 copper max.).....	26.00-26.75
AXS-679.....	24.00-25.00

## Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97 1/2%.....	24.00-25.50
Grade 2—92-95%.....	23.25-24.50
Grade 3—90-92%.....	22.50-23.75
Grade 4—85-90%.....	21.75-22.75

### SCRAP METALS

#### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper.....	32	31 1/2
Yellow brass.....	24 1/2	22 1/2
Red brass.....	28 1/2	27 1/2
Comm. bronze.....	29 1/2	28 1/2
Mang. bronze.....	23 1/2	22 1/2
Yellow brass rod ends.....	24 1/2	.....

#### Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire.....	30	30 1/4
No. 2 copper wire.....	28 1/2	28 3/4
Light copper.....	26 1/4	26 1/2
*Refinery brass.....	27	.....
*Dry copper content.....	.....	.....

#### Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire.....	30	30 1/4
No. 2 copper wire.....	28 1/2	28 3/4
Light copper.....	26 1/4	26 1/2
No. 1 composition.....	27	27 1/2
No. 1 comp. turnings.....	27	.....
Hvy. yellow brass solids.....	20	.....
Brass pipe.....	20	.....
Radiators.....	22	.....

#### Aluminum

Mixed old cast.....	16 1/2	17 1/2
Mixed new clips.....	17	18
Mixed turnings, dry.....	16 1/2	17

#### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

#### Copper and Brass

No. 1 copper wire.....	27	27 1/2
No. 2 copper wire.....	25 1/2	26
Light copper.....	24	24 1/2
Auto radiators (unsweated).....	17 1/2	18
No. 1 composition.....	24	24 1/2
No. 1 composition turnings.....	22 1/2	23
Cocks and faucets.....	16	16 1/2
Clean heavy yellow brass.....	19	19 1/2
Brass pipe.....	21	21 1/2
New soft brass clippings.....	18	18 1/2
No. 1 brass rod turnings.....	18	18 1/2

#### Aluminum

Alum. pistons and struts.....	6 1/2	7
Aluminum crankcases.....	12	12 1/2
1100 (2S) aluminum clippings.....	15	15 1/2
Old sheet and utensils.....	12	12 1/2
Borings and turnings.....	8	8 1/2
Industrial castings.....	12	12 1/2
2024 (24S) clippings.....	13 1/2	14

#### Zinc

New zinc clippings.....	7	7 1/2
Old zinc.....	4 1/2	5
Zinc routings.....	2 1/2	3
Old die cast scrap.....	3 1/2	2 1/2

#### Nickel and Monel

Pure nickel clippings.....	\$1.75-\$1.86
Clean nickel turnings.....	\$1.50-\$1.60
Nickel anodes.....	\$1.75-\$1.86
Nickel rod ends.....	\$1.75-\$1.86
New Monel clippings.....	75-80
Clean Monel turnings.....	70-75
Old sheet Monel.....	70-80
Nickel silver clippings, mixed.....	21
Nickel silver turnings, mixed.....	18

#### Lead

Soft scrap lead.....	12 1/2	13
Battery plates (dry).....	7	7 1/2
Batteries, acid free.....	4 1/2	.....

#### Miscellaneous

Block tin.....	80	81
No. 1 pewter.....	62 1/2	63
Auto babbit.....	42	42 1/2
Mixed common babbit.....	13	13 1/2
Solder joints.....	18	18 1/2
Siphon tops.....	42	.....
Small foundry type.....	15 1/2	15 1/2
Monotype.....	14 1/2	15
Lino. and stereotype.....	13	13 1/2
Electrotype.....	12 1/2	12 1/2
Hand picked type shells.....	10	10 1/2
Lino. and stereo. dross.....	5 1/2	5 1/2
Electro. dross.....	4 1/2	4 1/2



## IRON AGE

**STEEL  
PRICES**(Effective  
Jan. 1, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
		Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.			\$107.00 B3		5.05 B3	7.40 B3	5.05 B3						
	Buffalo, N. Y.	\$74.00 B3, R3	\$91.50 B3, R3	\$107.00 B3, R3	5.90 B3	5.05 B3	7.40 B3	5.05 B3	4.675 B3, R3	6.85 R7	6.95 B3			
	Claymont, Del.													
	Harrison, N. J.													14.55 C11
	Conshehocken, Pa.		\$96.50 A2	\$114.00 A2					4.725 A2	6.90 A2	6.95 A2			
	New Bedford, Mass.									7.30 R6				
	Johnstown, Pa.	\$74.00 B3	\$91.50 B3	\$107.00 B3		5.05 B3	7.40 B3							
	Boston, Mass.									7.40 T8				14.90 T8
	New Haven, Conn.									7.30 D1				
	Baltimore, Md.									6.85 T8				
	Phoenixville, Pa.					5.85 P2		5.85 P2						
	Sparrows Pt., Md.								4.675 B3		6.95 B3			
MIDDLE WEST	Bridgeport, Wallingford, Conn.	\$79.00 N8	\$96.50 N8	\$107.00 N8						7.30 W1 6.95 N8				
	Pawtucket, R. I. Worcester, Mass.									7.48 A5,N7				14.90 N7
	Alton, Ill.								4.875 L1					
	Ashland, Ky.								4.675 A7					
	Canton-Massillon, Dover, Ohio		\$94.00 R3	\$107.00 R3, T5						6.85 G4		10.10 G4		14.55 G4
	Chicago, Ill. Franklin Park, Ill.	\$74.00 U1, R3	\$91.50 U1, R3,W8	\$107.00 U1, R3,W8	5.90 U1	5.00 U1, W8	7.35 U1, Y1 6.00 W8	5.00 U1	4.675 N4 4.675 A1	6.95 A1,T8			7.75 W8 S9	14.55 A1, S9,T8
	Cleveland, Ohio									6.85 A5,J3			7.75 J3	
	Detroit, Mich.	\$74.00 R5		\$107.00 R5					4.775 G3, M2	6.95 M2,G3, D2,P11	7.05 G3	10.10 G3, D2	7.75 G3	
	Anderson, Ind.									6.85 G4		10.10 G4		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	\$74.00 U1	\$91.50 U1	\$107.00 U1, Y1	5.90 I3	5.00 U1	7.35 U1,I3	5.00 I3	4.675 U1, I3,Y1	6.85 Y1	6.95 U1, I3,Y1	10.20 Y1	7.75 U1, Y1	
	Sterling, Ill.	\$74.00 N4							4.775 N4					
	Indianapolis, Ind.									7.00 C5				
	Newport, Ky.												7.75 N5	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		\$91.50 S1, C10	\$107.00 S1, C10					4.675 S1, R3	6.85 T4	6.95 S1, R3	10.00 S1, R3	7.75 S1	14.55 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$74.00 U1, J3	\$91.50 U1, J3,C11	\$107.00 U1, C11	5.90 U1	5.00 U1, J3	7.35 U1, J3	5.00 U1	4.675 P6	5.750 P6 6.85 J1,B4, S7			7.75 S9	14.55 S9
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.					5.00 W3			4.675 W3	6.85 W3,F3	6.95 W3	9.65 W3		
	Youngstown, Ohio	\$74.00 R3	\$91.50 Y1, C10	\$107.00 Y1		5.00 Y1	7.35 Y1		4.675 U1, Y1	6.85 Y1,C5	6.95 U1, Y1	10.20 Y1	7.75 U1, Y1	
WEST	Fontana, Cal.	\$83.50 K1	\$101.00 K1	\$128.00 K1		5.70 K1	8.05 K1	5.85 K1	5.475 K1	8.50 K1				
	Geneva, Utah	\$91.50 C7				5.00 C7	7.35 C7							
	Kansas City, Mo.					5.10 S2	7.45 S2		4.925 S2		7.20 S2			
	Los Angeles, Torrance, Cal.		\$101.00 B2	\$127.00 B2		5.70 C7, B2	8.05 B2		5.425 B2, C7	8.80 C1			8.95 B2	
	Minnequa, Colo.					5.30 C6			5.775 C6					
	Portland, Ore.					5.75 O2								
	San Francisco, Niles, Pittsburg, Cal.		\$101.00 B2			5.65 B2	8.00 B2		5.425 C7,B2					
	Seattle, Wash.		\$105.00 B2			5.75 B2	8.10 B2		5.675 B2					
SOUTH	Atlanta, Ga.								4.875 A8					
	Fairfield, Ala. City, Birmingham, Ala.	\$74.00 T2	\$91.50 T2			5.30 T2,R3 5.30 C16	7.35 T2		4.675 T2,R3 4.975 C10		6.95 T2			
	Houston, Lone Star, Texas	\$80.00 L3	\$96.50 S2	\$112.00 S2		5.10 S2	7.45 S2		4.925 S2		7.20 S2			

## IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

**STEEL  
PRICES**(Effective  
Jan. 1, 1957)

	SHEETS										WIRE ROD	TINPLATE†		BLACK PLATE
	Hot-rolled 18 ga. & heavier	Cold- rolled	Galvanized	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.			Cokes* 1.25-lb. base box	Electro* 0.25 lb. base box	Holloware Enameling 29 ga.
EAST	Belehem, Pa.													
	Buffalo, N. Y.	4.675 B3	5.75 B3			6.90 B3	8.525 B3			5.80 W6		† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price, Can-making quality blackplate 55 to 128 lb. deduct \$2.20 from 1.25-lb. coke base box. * COKE: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add \$1.00. Differ- ential 1.00 lb., 0.25 lb. add 65¢.		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.	4.725 A2	5.80 A2			6.95 A2								
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.									5.80 B3				
	Fairless, Pa.	4.725 U1	5.80 U1			6.95 U1	8.575 U1					\$9.80 U1	\$8.50 U1	
	New Haven, Conn.													
	Phoenixville, Pa.													
MIDDLE WEST	Sparrows Pt., Md.	4.675 B3	5.75 B3	6.30 B3		6.90 B3	8.575 B3	9.275 B3		5.90 B3		\$9.80 B3	\$8.50 B3	
	Worcester, Mass.									6.10 A5				
	Trenton, N. J.													
	Alton, Ill.									6.00 L1				
	Ashland, Ky.	4.675 A7		6.30 A7	6.325 A7									
	Canton-Massillon, Dover, Ohio			6.30 R3, R1										
	Chicago, Joliet, Ill.	4.675 W8, A1				6.90 U1			5.80 K2	5.80 A5, R3, N4, W8, K2				
	Sterling, Ill.									5.90 N4, K2				
	Cleveland, Ohio	4.675 J3, R3	5.75 J3, R3		6.325 R3	6.90 R3	8.525 R3, J3			5.80 A5				
	Detroit, Mich.	4.775 G3, M2	5.85 G3, 5.75 M2			7.00 G2	8.625 G3							
	Newport, Ky.	4.675 A9	5.75 A9											
	Gary, Ind. Harbor, Indiana	4.675 U1, I3, Y1	5.75 U1, I3, Y1	6.30 U1, I3	6.325 U1, I3, Y1	6.70 U1	6.90 U1, Y1, I3	8.525 U1, Y1		5.80 Y1		\$9.70 U1, Y1	\$8.40 I3, U1, Y1	7.15 U1, Y1
	Granite City, Ill.	4.875 G2	5.95 G2	6.50 G2	6.525 G2								\$8.50 G2	7.25 G2
	Kokomo, Ind.			6.40 C9						5.90 C9				
	Mansfield, Ohio		5.75 E2			6.70 E2								
	Middletown, Ohio		5.75 A7	6.30 A7	6.325 A7	6.70 A7								
	Niles, Warren, Ohio Sharon, Pa.	4.675 S1, R1, N3	5.75 R3	6.30 R3	6.325 N3	6.70 N3	6.90 S1, R3	8.525 S1, R3					\$8.40 R3	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.675 U1, J3, P6	5.75 U1, J3, P6	6.30 U1, J3	6.325 U1		6.90 U1, J3, R3	8.525 U1, J3	9.275 U1	5.80 A5, P6, J3		\$9.70 J3, U1	\$8.40 U1	7.15 U1
	Portsmouth, Ohio	4.675 P7	5.75 P7							5.80 P7				
	Weirton, Wheeling, Follansbee, W. Va.	4.675 W3, W3	5.75 W3, W3, F3	6.30 W3, W3		6.70 W3, W3	6.90 W3	8.525 W3				\$9.70 W5	\$8.40 W5	7.15 W5, 7.40 W3
	Youngstown, Ohio	4.675 U1, Y1	5.75 Y1		6.325 Y1		6.90 Y1	8.525 Y1		5.80 Y1				7.15 Y1
WEST	Fontana, Cal.	5.475 K1	6.95 K1			7.70 K1	9.725 K1					\$10.45 K1	\$9.15 K1	
	Geneva, Utah	4.775 C7												
	Kansas City, Mo.									6.05 S2				
	Los Angeles, Torrance, Cal.									6.60 B2				
	Minnequa, Colo.									6.05 C6				
	San Francisco, Niles, Pittsburg, Cal.	5.375 C7	6.70 C7	7.05 C7						6.45 C7		\$10.45 C7	\$9.15 C7	
	Seattle, Wash.													
SOUTH	Atlanta, Ga.													
	Fairfield, Ala. Alabama City, Ala.	4.675 T2, R3	5.75 T2,	6.30 T2, R3						5.80 T2, R3		\$9.80 T2	\$8.50 T2	
	Houston, Tex.									6.05 S2				

## IRON AGE

STEEL  
PRICES(Effective  
Jan. 1, 1957)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BARS						PLATES				WIRE
	Carbon† Steel	Reinforc- ing	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.			6.125 B3	8.325 B3	7.40 B3					
	Buffalo, N. Y.	5.075 B3,R3	5.075 B3,R3	6.90 B5	6.125 B3,R3	8.325 B5,B3	7.40 B3	4.85 B3			7.20 W6
	Claymont, Del.							5.70 C4	6.85 C4	7.55 C4	
	Coatesville, Pa.							5.25 L4	6.85 L4	7.55 L4	
	Conshohocken, Pa.							4.90 A2	5.925 A2	6.25 A2	7.25 A2
	Harrisburg, Pa.							5.80 P2	6.275 P2		
	Hartford, Conn.		7.35 R3		8.625 R3	7.40 B3					
	Johntown, Pa.	5.075 B3	5.075 B3		6.125 B3		4.85 B3		6.85 B3	7.25 B3	7.20 B3
	Fairless, Pa.	5.225 U1	5.225 U1		6.275 U1						
	Newark, N. J.		7.30 W10		8.50 W10						
	Camden, N. J.		7.30 P10		8.50 P10						
	Bridgeport, Conn. Putnam, Conn.	5.30 N8	5.30 N8	7.20 N8 7.40 W10	6.20 N8	8.475 N8	7.50 N8				
	Sparrows Pt., Md.		5.075 B3				4.85 B3		6.85 B3	6.85 B3	7.30 B3
	Palmer, Worcester, Readville, Mass. Milton, Pa.	5.225 M7	5.225 M7	7.40 B5,C14		8.325 A5 8.625 B5					7.50 A5,W6 9.025 T8
	Spring City, Pa.			7.30 K4		8.50 K4					
MIDDLE WEST	Alton, Ill.	5.275 L1									7.40 L1
	Ashland, Newport, Ky						4.85 A7,N5		6.85 N5		
	Canton, Massillon, Ohio		6.85 R3,R2	6.125 R3,T5	8.325 R3,R2, T5						
	Chicago, Joliet, Ill.	5.075 U1,R3, W8,N4 5.575 P13	5.075 U1,R3, N4 5.575 P13	6.85 A5,B5, W10,L2 W8,N9	6.125 U1,R3, W8	8.325 A5,B5, W8,L2,N9, W10	5.875 W8	4.85 U1,I3, W8,A1	5.925 U1	6.85 U1,W8	7.25 U1 7.20 A5,K2 R3,N4,W7
	Cleveland, Ohio	5.075 R3	5.075 R3	6.85 A5,C13		8.325 A5,C13	7.425 R3	4.95 J3,R3	5.925 J3		7.25 J3,R3 7.20 A5, C13
	Detroit, Mich.	5.175 G3	5.425 G3	7.05 B5,P8 7.10 P3 6.85 R5	6.225 G3	8.525 B5,P3, P8 8.325 R5	7.525 G3	4.95 G3		6.90 G3	
	Duluth, Minn.										7.20 A5
	Gary, Ind. Harbor, Crawfordsville	5.075 U1,I3, Y1	5.075 U1,I3, Y1	6.85 R3,M5	6.125 U1,I3, Y1	8.325 R3,M4	7.425 U1,I3, Y1	4.85 U1,I3, Y1	5.925 I3	6.85 U1,Y1	7.25 U1,Y1 7.30 M4
	Granite City, Ill.							5.05 G2			
	Kokomo, Ind.										7.30 C9
	Sterling, Ill.	5.525 N4	5.175 N4								7.30 K2
	Niles, Warren, Ohio Sharon, Pa.			6.85 C10	6.125 C10,S1	8.325 C10	7.425 S1	4.85 S1,R3		6.85 S1	7.25 S1,R3
	Pittsburgh, Pa. Midland, Pa.	5.075 U1, C11,J3	5.075 U1,J3	6.85 A5,C8, J3,R3,S9, B4,W10	6.125 U1,C11	8.325 A5,R3, S9,C8,W10, C11	7.425 U1,J3	4.85 U1,J3	5.925 U1	6.85 U1,J3	7.25 U1,J3 7.20 A5,J3, P6
	Portsmouth, Ohio										7.20 P7
	Weirton, Wheeling, Follansbee, W. Va.							4.85 W5			
	Youngstown, Ohio	5.075 U1, Y1,R3	5.075 U1, Y1,R3	6.85 U1,Y1, F2	6.125 U1,Y1	8.325 Y1,F2	7.425 U1,Y1	4.85 U1,Y1, R3		6.85 Y1	7.25 Y1 7.20 Y1
WEST	Emeryville, Cal.	5.825 J5	5.825 J5								
	Fontana, Cal.	5.775 K1	5.775 K1		7.175 K1		8.125 K1	5.55 K1		7.55 K1	7.95 K1
	Geneva, Utah	5.175 C7						4.85 C7			7.25 C7
	Kansas City, Mo.	5.325 S2	5.325 S2		6.375 S2		7.675 S2				7.45 S2
	Los Angeles, Torrance, Cal.	5.775 C7,B2	5.775 C7,B2	8.30 R3,P14	7.175 B2	10.10 P14	8.125 B2				8.15 B2
	Minnequa, Colo.	5.525 C6	5.525 C6					5.70 C6			7.45 C6
	Portland, Ore.	5.825 O2	5.825 O2								
	San Francisco, Niles, Pittsburg, Cal.	5.775 C7,P9 5.825 B2	5.775 C7,P9 5.825 B2				8.175 B2				8.15 C7,C6
	Seattle, Wash.	5.825 B2 N6	5.825 B2				8.175 B2	5.75 B2		7.75 B2	8.15 B2
SOUTH	Atlanta, Ga.	5.575 A8									7.40 A8
	Fairfield, Ala. City, Birmingham, Ala.	5.075 T2,R3 5.375 C16	5.075 T2,R3 5.375 C16				7.425 T2	4.85 T2,R3		7.25 T2	7.20 T2,R3
	Houston, Ft. Worth, Lone Star, Tex.	5.325 S2	5.325 S2		6.375 S2		7.675 S2	4.95 S2 5.20 L3		6.95 S2	7.35 S2 7.45 S2

† Merchant Quality—Specialty Quality .35¢ higher.

January 3, 1957

# Steel Prices (Effective Jan. 1, 1957)

## Key to Steel Producers

### With Principal Offices

A1 Acme Steel Co., Chicago  
A2 Alan Wood Steel Co., Conshohocken, Pa.  
A3 Allegheny Ludlum Steel Corp., Pittsburgh  
A4 American Clad Metals Co., Carnegie, Pa.  
A5 American Steel & Wire Div., Cleveland  
A6 Angel Nail & Chaplet Co., Cleveland  
A7 Armco Steel Corp., Middletown, Ohio  
A8 Atlantic Steel Co., Atlanta, Ga.  
A9 Acme Newport Steel Co., Newport, Ky.  
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.  
B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
B3 Bethlehem Steel Co., Bethlehem, Pa.  
B4 Blair Strip Steel Co., New Castle, Pa.  
B5 Bliss & Laughlin, Inc., Harvey, Ill.  
B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.  
C1 Calstrip Steel Corp., Los Angeles  
C2 Carpenter Steel Co., Reading, Pa.  
C3 Central Iron & Steel Co., Harrisburg, Pa.  
C4 Claymont Products Dept., Claymont, Del.  
C5 Cold Metals Products Co., Youngstown, O.  
C6 Colorado Fuel & Iron Corp., Denver  
C7 Columbia Geneva Steel Div., San Francisco  
C8 Columbia Steel & Shifting Co., Pittsburgh  
C9 Continental Steel Corp., Kokomo, Ind.  
C10 Copperweld Steel Co., Pittsburgh, Pa.  
C11 Crucible Steel Co. of America, Pittsburgh  
C12 Cumberland Steel Co., Cumberland, Md.  
C13 Cuyahoga Steel & Wire Co., Cleveland  
C14 Compressed Steel Shifting Co., Ready, Ill., Mass.  
C15 G. O. Carlson, Inc., Thorndale, Pa.  
C16 Connors Steel Div., Birmingham  
C17 Chester Blast Furnace, Inc., Chester, Pa.  
D1 Detroit Steel Corp., Detroit  
D2 Dearborn Div., Sharon Steel Corp.  
D3 Driver Harris Co., Harrison, N. J.  
D4 Dickson Weatherproof Nail Co., Evanston, Ill.  
D5 Henry Dinton Div., Philadelphia  
E1 Eastern Stainless Steel Corp., Baltimore  
E2 Empire Steel Co., Mansfield, O.  
F1 Fifth Sterling, Inc., McKeesport, Pa.  
F2 Fitzsimons Steel Corp., Youngstown

F3 Follansbee Steel Corp., Follansbee, W. Va.  
G2 Granite City Steel Co., Granite City, Ill.  
G3 Great Lakes Steel Corp., Detroit  
G4 Greer Steel Co., Dover, O.  
H1 Hanna Furnace Corp., Detroit  
I2 Ingersoll Steel Div., Chicago  
I3 Inland Steel Co., Chicago  
I4 Interlake Iron Corp., Cleveland  
J1 Jackson Iron & Steel Co., Jackson, O.  
J2 Jessop Steel Corp., Washington, Pa.  
J3 Jones & Laughlin Steel Corp., Pittsburgh  
J4 Joslyn Mfg. & Supply Co., Chicago  
J5 Judson Steel Corp., Emeryville, Calif.  
K1 Kaiser Steel Corp., Fontana, Cal.  
K2 Keystone Steel & Wire Co., Peoria  
K3 Koppers Co., Granite City, Ill.  
K4 Keystone Drawn Steel Co., Spring City, Pa.  
L1 Laclede Steel Co., St. Louis  
L2 La Salle Steel Co., Chicago  
L3 Lone Star Steel Co., Dallas  
L4 Lukens Steel Co., Coatesville, Pa.  
M1 Mahoning Valley Steel Co., Niles, O.  
M2 McLouth Steel Corp., Detroit  
M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.  
M5 Monarch Steel Div., Hammond, Ind.  
M6 Mystic Iron Works, Everett, Mass.  
M7 Milton Steel Products Div., Milton, Pa.  
N1 National Supply Co., Pittsburgh  
N2 National Tube Div., Pittsburgh  
N3 Niles Rolling Mill Div., Niles, O.  
N4 Northwestern Steel & Wire Co., Sterling, Ill.  
N6 Northwest Steel Rolling Mills, Seattle  
N7 Newman Crosby Steel Co., Pawtucket, R. I.  
N8 Northeastern Steel Corp., Bridgeport, Conn.  
N9 Nelson Steel & Wire Co.  
O1 Oliver Iron & Steel Co., Pittsburgh  
O2 Oregon Steel Mills, Portland  
P1 Page Steel & Wire Div., Monessen, Pa.  
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
P5 Pittsburgh Screw & Bolt Co., Pittsburgh  
P6 Pittsburgh Steel Co., Pittsburgh  
P7 Portsmouth Div., Detroit Steel Corp., Detroit  
P8 Plymouth Steel Co., Detroit

P9 Pacific States Steel Co., Niles, Cal.  
P10 Precision Drawn Steel Co., Camden, N. J.  
P11 Production Steel Strip Corp., Detroit  
P13 Phoenix Mfg. Co., Joliet, Ill.  
P14 Pacific Tube Co.  
R1 Reeves Steel & Mfg. Co., Dover, O.  
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.  
R3 Republic Steel Corp., Cleveland  
R4 Roebing Sons Co., John A., Trenton, N. J.  
R5 Rotary Electric Steel Co., Detroit  
R6 Rodney Metals, Inc., New Bedford, Mass.  
R7 Rome Strip Steel Co., Rome, N. Y.  
S1 Sharon Steel Corp., Sharon, Pa.  
S2 Sheffield Steel Div., Kansas City  
S3 Shenango Furnace Co., Pittsburgh  
S4 Simonds Saw and Steel Co., Fitchburg, Mass.  
S5 Sweet's Steel Co., Williamsport, Pa.  
S6 Standard Forging Corp., Chicago  
S7 Stanley Works, New Britain, Conn.  
S8 Superior Drawn Steel Co., Monaca, Pa.  
S9 Superior Steel Corp., Carnegie, Pa.  
S10 Seneca Steel Service, Buffalo  
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
T2 Tennessee Coal & Iron Div., Fairfield  
T3 Tennessee Products & Chem. Corp., Nashville  
T4 Thomas Strip Div., Warren, O.  
T5 Tunkin Steel & Tube Div., Canton, O.  
T7 Texas Steel Co., Fort Worth  
T8 Thompson Wire Co., Boston  
U1 United States Steel Corp., Pittsburgh  
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.  
U3 Ulbrich Stainless Steels, Wallingford, Conn.  
U4 U. S. Pipe & Foundry Co., Birmingham  
W1 Wallingford Steel Co., Wallingford, Conn.  
W2 Washington Steel Corp., Washington, Pa.  
W3 Weirton Steel Co., Weirton, W. Va.  
W4 Wheatland Tube Co., Wheatland, Pa.  
W5 Wheeling Steel Corp., Wheeling, W. Va.  
W6 Wickwire Spencer Steel Div., Buffalo  
W7 Wilson Steel & Wire Co., Chicago  
W8 Wisconsin Steel Div., S. Chicago, Ill.  
W9 Woodward Iron Co., Woodward, Ala.  
W10 Wycoff Steel Co., Pittsburgh  
W12 Wallace Barnes Steel Div., Bristol, Conn.  
Y1 Youngstown Sheet & Tube Co., Youngstown, O.

## PIPE AND TUBING

Base discounts (per) f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD												SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2 In.		3 In.		3 1/2 In.		4 In.	
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.
<b>STANDARD T. &amp; C.</b>																				
Sparrows Pt. B1	10.50	+4.75	13.50	+0.75	16.00	2.75	18.50	3.50	19.00	4.50	19.50	5.00	21.00	4.75						
Youngstown R1	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75						
Fontana K1	0.00	+15.25	3.00	+11.25	5.50	+7.75	8.00	+7.00	8.50	+6.00	9.00	+5.50	10.50	+5.75						
Pittsburgh J1	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75	+2.00	+17	4.50	+12.25	7.00	+9.75
Alton, Ill. L1	10.50	+4.75	13.50	+0.75	16.00	2.75	18.50	3.50	19.00	4.50	19.50	5.00	21.00	4.75						
Sharon M1	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75						
Fairless N2	10.50	+4.75	13.50	+0.75	16.00	2.75	18.50	3.50	19.00	4.50	19.50	5.00	21.00	4.75						
Pittsburgh N1	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75	+2.00	+17	4.50	+12.25	7.00	+9.75
Wheeling W5	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75						
Wheatland W4	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75						
Youngstown Y1	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75	+2.00	+17	4.50	+12.25	7.00	+9.75
Indiana Harbor Y1	11.50	+5.75	14.50	1.25	17.00	3.75	19.50	4.50	20.00	5.50	20.50	6.00	22.00	5.75						
Lorain N2	12.50	+2.75	15.50	1.25	18.00	4.75	20.50	5.50	21.00	6.50	21.50	7.00	23.00	6.75	+2.00	+17	4.50	+12.25	7.00	+9.75
<b>EXTRA STRONG PLAIN ENDS</b>																				
Sparrows Pt. B1	15.00	1.25	19.00	5.25	21.00	6.75	21.50	7.50	22.00	8.50	22.50	9.00	23.00	7.75						
Youngstown R1	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75						
Fairless N2	15.00	1.25	19.00	5.25	21.00	6.75	21.50	7.50	22.00	8.50	22.50	9.00	23.00	7.75						
Fontana K1	0.00																			
Pittsburgh J1	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75	+0.50	+14.50	7.00	+8.75	9.50	+6.25
Alton, Ill. L1	15.00	1.25	19.00	5.25	21.00	6.75	21.50	7.50	22.00	8.50	22.50	9.00	23.00	7.75						
Sharon M1	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75						
Pittsburgh N1	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75	+0.50	+14.50	7.00	+8.75	9.50	+6.25
Wheeling W5	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75						
Wheatland W4	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75						
Youngstown Y1	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75	+0.50	+14.50	7.00	+8.75	9.50	+6.25
Indiana Harbor Y1	16.00	2.25	20.00	6.25	22.00	9.75	22.50	8.50	23.00	9.50	23.50	10.00	22.00	8.75						
Lorain N2	17.00	3.25	21.00	7.25	23.00	10.75	23.50	9.75	24.00	10.50	24.50	11.00	25.00	9.75	+0.50	+14.50	7.00	+8.75	9.50	+6.25

Thavens only, butt welded and seamless 2 1/4 pt. higher discount. Plain ends, butt welded and seamless, 3-in. and under, 5 1/2 pt. higher discount. Galvanized discounts based on zinc price range of over 9c to 11c per lb. East St. Louis. For each 2c change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price range of over 13c to 15c would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7c to 9c would increase discounts. East St. Louis zinc price now 13.50c per lb.



## TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	\$1.68	T-1
18	4	1	—	5	2.385	T-4
18	4	2	—	—	1.845	T-2
1.5	4	1.5	8	—	1.04	M-1
6	4	3	6	—	1.43	M-3
6	4	2	5	—	1.185	M-2

High-carbon chromium.. .83 D-3, D-5  
Oil hardened manganese .45 O-2  
Special carbon .41 W-1  
Extra carbon .345 W-1  
Regular carbon .29 W-1  
Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

## CLAD STEEL

Base prices, cents per lb f.o.b.

Cladding	Plate (A3, J2, L4)			Sheet (J2)
	10 pct	15 pct	20 pct	
302				33.25
304	34.60	38.00	41.50	35.25
316	39.70	43.20	46.65	52.25
321	36.35	39.80	43.50	42.00
347	39.50	43.95	48.45	51.00
405	29.20	33.15	37.05	
410, 430	28.70	32.65	36.55	

CR Strip (S9) Copper, 10 pct, 2 sides, 40.65; 1 side, 33.40.

## ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field.....	9.00	9.20	
Armature.....	10.35	10.35	10.85
Elect.....	11.00	11.025	11.525
Motor.....	12.05	12.075	12.575
Dynamo.....	13.05	13.05	13.55
Trans. 72.....	14.05	14.05	14.55
Trans. 65.....	14.60		
Trans. 58.....	15.10	Grain Oriented	
Trans. 52.....	16.15	Trans. 80..... 18.50	Trans. 73..... 19.00

Producing points: Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (NS); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3) (20¢ higher, HR); Zanesville, Butler (A7).

## LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1956 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump.....	\$12.10
Old range, bessemer.....	11.25
Old range, nonbessemer.....	11.10
Mesabi, bessemer.....	11.00
Mesabi, nonbessemer.....	10.85
High phosphorus.....	10.85

## WAREHOUSES

Metropolitan Price, dollars per 100 lb.

WAREHOUSES		Sheets			Strip		Plates	Shapes	Bars		Alloy Bars				
		Hot-Rolled 18 ga. & hr.	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled			Standard Structural	Hot-Rolled	Cold- Finished	Hot-Rolled 4015 As rolled	Hot-Rolled 4100 Annealed	Cold-Drawn 4015 As rolled	Cold-Drawn 4100 Annealed
Cities	City Delivery & Charge														
Atlanta.....		8.07	9.27	9.83	8.16		8.40	8.44	8.30	10.14					
Baltimore.....	\$ 10	7.79	8.99	9.12	8.27		8.12	8.57	8.34	9.09	14.99	14.44	18.39	18.09	
Birmingham.....	15	7.68	8.88	8.85	7.78		8.01	8.05	7.91	10.04					
Boston.....	10	8.70	9.73	11.02	8.79		8.98	8.90	8.88	10.71	15.05	14.45	18.51	18.10	
Buffalo.....		8.80	9.83		8.89		9.08	9.00	8.98	10.81					
		7.90	9.05	10.87	8.15		8.40	8.40	8.15	8.85	15.00	14.45	18.40		
Chicago.....	15	7.70	8.90	9.70	7.78		8.01	8.05	7.91	8.35	14.65	14.10	18.05	17.75	
Cincinnati.....	15	7.85	9.05		7.93		8.16	8.20	8.06	8.50					
		7.97	9.04	9.90	8.21		8.49	8.70	8.34	8.97	14.93	14.38	18.33	18.03	
Cleveland.....	15	7.68	8.88	9.60	7.88		8.21	8.38	7.99	8.60	14.73	14.18	18.13	17.83	
Denver.....		9.55	11.09	12.41	9.70		9.80	9.60	9.75	10.54				19.79	
Detroit.....	15	8.06	9.28	10.17	8.25		8.48	8.70	8.33	8.83		14.04		17.09	
Houston.....		8.70	9.65		8.80		8.60	8.90	8.95	10.55	15.50		19.30	19.05	
Kansas City.....	20	8.52	9.72	10.67	8.60		8.83	8.87	8.73	9.42	15.32	14.77	18.72	18.42	
Los Angeles.....	10	8.90	10.65	11.65	9.10		9.35	8.95	8.80	11.70	15.85	15.35	19.70	19.45	
Memphis.....	15	8.02	9.22		8.12		8.35	8.39	8.25	9.85					
Milwaukee.....	15	7.82	9.02	9.82	7.90		8.13	8.24	8.03	8.57	14.77		18.17	17.87	
New York.....	10	8.45	9.63	10.33	8.91		8.88	8.84	8.93	10.71	15.02	14.47	18.42	18.12	
Norfolk.....	20	8.00			8.40		8.35	8.70	8.45	10.70					
Philadelphia.....	10	7.89	9.08	9.66	8.58		8.28	8.38	8.37	9.12	14.80	14.15	18.20	17.90	
Pittsburgh.....	15	7.99	9.18	10.22	8.68		8.38	8.48	8.47	9.22		14.25			
		7.68	8.88	10.05	7.88		8.01	8.20	7.91	8.60	14.65	13.80	18.05	16.85	
												14.10		17.75	
Portland.....		8.90	9.65	11.40	9.05		8.70	8.90	8.95	13.55	16.70	16.10	20.40	20.25	
San Francisco.....	10	8.75	10.30	10.80	8.95		8.85	8.85	8.80	12.30	15.85	15.35	19.70	19.45	
Seattle.....		9.35	10.45	11.55	9.50		9.05	9.15	9.30	13.15	16.10	15.55	19.50	19.20	
St. Louis.....	15	8.02	9.21	10.03	8.11		8.34	8.48	8.25	8.93	14.83	14.28	18.23	17.93	
		8.17	9.49	10.18	8.26		8.49	8.63	8.40	9.08	14.98		18.38		
St. Paul.....	15	8.29	9.64	10.31	8.39		8.71	8.75	8.52	9.21		14.62		18.27	

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.

•• F.O.B. Plant, warehouse price. † 16 gage. ‡ Deduct for country delivery.

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails		Woven Wire Fence		1/2" Fence Posts		Galv. Banded and Twisted Barb Wire		March Wire Am'd		March Wire Gate	
	Cal	Col	Cal	Col	Cal	Col	Cal	Col	e/lb.	e/lb.	e/lb.	e/lb.
Alabama City R3.....	167	181			195		187	8.10		8.50		
Aliquippa, Pa. J3***	164	179					181	7.95		8.475		
Atlanta A8**	166	182			192		190	8.05		8.65		
Barlowe K2**	166	182			192		190	8.05		8.65		
Buffalo W6								8.10		8.50		
Chicago, Ill. N4**	164	180	167	190	188	7.95		8.55				
Cleveland A6	173							8.10				
Cleveland A5								7.95				
Crawfordsville M4**	166	182			192		190	8.05		8.65		
Donora, Pa. A5	164	176			190		184	7.95		8.35		
Duluth A5	164	176			190		184	7.95		8.35		
Fairfield, Ala. T2	164	176			190		184	7.95		8.35		
Galveston D4	169							7.95				
Houston S2	169	181			195		189	8.20		8.60		
Johannston, Pa. B3**	164	180	167				188	7.95		8.55		
Joliet, Ill. A5	164	176			190		184	7.95		8.35		
Kokomo, Ind. C9*	166	178			192		186	8.05		8.45		
Los Angeles B2*	169	181						8.90		9.50		
Kansas City S2*	169	181			195		189	8.20		8.60		
Minneapolis C6*	169	181	172	195			189	8.20		8.60		
Minneapolis P6	167	185						191	8.10	8.10		
Pittsburg, Cal. C7	186	199					204	8.90		9.30		
Portsmouth P7								7.95				
Rankin, Pa. A5	164	176					184	7.95		8.35		
So. Chicago R3	167	181			195		187	8.10		8.50		
S. San Francisco C6					214			8.90		9.30		
Spartan, Pa. B3**	166				192		186	8.05		8.45		
Struthers, O. Y1*								7.95		8.45		
Worcester A5	170							8.25		8.65		
Williamsport, Pa. S3			175									

\* Zinc less than .10¢. † Plus zinc extras.  
\*\* 13.5 zinc. ‡ Wholesalers only.  
\*\*\* .10¢ zinc.

## C-R SPRING STEEL

Cities	City Delivery & Charge	CARBON CONTENT				
		0.26	0.41	0.61	0.81	1.06
Baltimore, Md. T3		8.25	10.10	12.30	15.30	18.25
Bristol, Conn. W12				12.30	15.30	18.25
Boston T8		8.50	10.10	12.30	15.30	18.25
Buffalo, N. Y. R7		7.95	9.80	12.60	15.00	17.95
Carnegie, Pa. S9				9.80	12.60	15.00
Cleveland A5		7.95	9.80	12.60	15.00	17.95
Detroit D1		8.05	9.90	12.10	15.10	
Detroit D2		8.05	9.90	12.10		
Dover, O. G4		7.95	9.80	12.60	15.00	17.95
Franklin Park, Ill. T8		8.05	9.80	12.60	15.00	17.95
Harrison, N. J. C11				12.30	15.30	18.25
Indianapolis C5		8.10	9.95	12.60	15.00	17.95
New Castle, Pa. B4		7.95	9.80	12.60	15.00	
New Haven, Conn. D1		8.40	10.10	12.30	15.30	
Pasadena, R. I. N7		8.50	10.10	12.30	15.30	18.25
Pittsburgh S7		7.95	9.80	12.60	15.00	17.95
Riverdale, Ill. A1		8.05	9.80	12.60	15.00	17.95
Sharon, Pa. S1		7.95	9.80	12.60	15.00	17.95
Trenton R4			10.10	12.30	15.30	18.25
Wallingford W1		8.40	10.10	12.30	15.30	18.15
Warren, Ohio T4		7.95	9.80	12.60	15.00	17.95
Wornton, W. Va. W3		7.95	9.80	12.60	15.00	17.95
Worcester, Mass. A5		8.50	10.10	12.30	15.30	18.25
Youngstown C5		7.95	9.80	12.60	15.00	17.95

† On Application.

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	R.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	34.88	40.85	33.21	—
	2½	12	46.98	55.01	44.73	—
	3	12	54.24	63.53	51.66	—
	3½	11	63.32	74.16	60.30	—
	4	10	84.09	98.47	80.07	—
National Tube	2	13	34.88	40.85	33.21	—
	2½	12	46.98	55.01	33.73	—
	3	12	54.24	63.53	51.66	—
	3½	11	63.32	74.16	60.30	—
	4	10	84.09	98.47	80.07	—
Pittsburgh Steel	2	13	34.88	40.85	—	—
	2½	12	46.98	55.01	—	—
	3	12	54.24	63.53	—	—
	3½	11	63.32	74.16	—	—
	4	10	84.09	98.47	—	—

## RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rail	Light Rail	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer U/I	5.075	6.00	6.35				
So. Chicago R3				8.775			
Ensley T2	5.075	6.00		8.775	6.025		
Fairfield T2		6.00			6.025		
Gary U/I	5.075	6.00		8.775	6.025		
Ind. Harbor T3	5.075		6.35	8.775			
Johntown B3		6.00		8.775			
John U/I	5.075		6.35				
Kansas City S2				8.775			
Lackawanna B3	5.075	6.00	6.35		6.025		
Lebanon B3						13.10	
Minneapolis C6	5.075	6.50	6.35	8.775	12.85	13.10	
Pittsburgh P5				8.775			
Pittsburgh J3				8.775	6.175	13.10	
Seattle B2	5.075		6.35	8.775	6.025	13.10	
Steele B3							
Struthers Y/I				8.775			
Torrence C7							
Williamport S5		6.15					
Youngstown R3				8.775			

## COKE

Furnace, beehive (f.o.b. oven) Net-Ton  
Connellsville, Pa. \$15.25 to \$15.75

Foundry, beehive (f.o.b. oven) \$18.00 to \$19.00

## Foundry oven coke

Buffalo, del'd	\$30.75
Detroit, f.o.b.	29.50
New England, del'd	30.55
Seaboard, N. J., f.o.b.	28.75
Philadelphia, f.o.b.	28.50
Swedesland, Pa., f.o.b.	28.50
Painesville, Ohio, f.o.b.	29.50
Erie, Pa., f.o.b.	29.50
Cleveland, del'd	31.55
Cincinnati, del'd	28.59
St. Paul, f.o.b.	28.50
St. Louis, f.o.b.	30.50
Birmingham, f.o.b.	27.60
Milwaukee, f.o.b.	29.50
Lone Star, f.o.b.	25.50

## ELECTRODES

Cents per lb f.o.b. plant, threaded, with  
nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	24.75	40	100, 110	10.70
20	72	24.00	35	110	10.70
16 to 18	72	24.50	30	110	10.85
14	72	25.00	24	72 to 84	11.25
12	72	25.50	20	90	11.00
10	60	26.50	17	72	11.40
10	48	27.00	14	72	11.85
7	60	26.75	12	60	12.95
6	60	30.00	10	60	13.00
4	60	33.25	8	60	13.30
3	40	35.25			
2 1/2	30	37.25			
2	24	57.75			

\*Prices shown cover carbon nipples.

## ELECTROPLATING SUPPLIES

## Anodes

(Cents per lb, fct allowed in quantity)

Copper	
Cast elliptical, 18 in. or longer, 5000 lb lots	67.43
Electrodeposited	46.28
Brass, 80-20, ball anodes, 2000 lb or more	68.00
Zinc, ball anodes, 2000 lb lots (for elliptical add 2¢ per lb)	21.25
Nickel, 99 pct plus, rolled carbon... (rolled depolarized add 3¢ per lb)	90.50
Cadmium	21.70
Tin, ball anodes and elliptical	\$1.10 to \$1.16

## Chemicals

(Cents per lb, f.o.b. shipping point)	
Copper cyanide, 100 lb drum	80.50
Copper sulphate, 5 or more 100 lb bags, per cwt.	20.65
Nickel salts, single, 100 lb bags...	28.25
Nickel chloride, freight allowed, 800 lb	43.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	21.55
(Philadelphia price \$1.80)	
Zinc cyanide, 100 to 900 lb	55.55
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 1 to 20 100 lb drums	29.25

## BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct Discounts

Machine and Carriage Bolts	Full Con- tainer Price	30 Con- tainers	20,000 Lb.	40,000 Lb.
1/2" and smaller x 6" and shorter	55	58 1/2	60 1/2	61 1/2
1/2" thru 1" x longer than 6"	48 1/2	50	52 1/2	54
Roller thread carriage bolts 1/2 in. & smaller	55	58 1/2	60 1/2	61 1/2
Lag, all diam. x 6" & shorter	55	58	60	61
Lag, all diam. longer than 6 in.	47	50	52	53
Plow bolts, 1/2" and smaller x 6" and shorter	54	57 1/2	59	60

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy. Full Case or  
Keg Price

1/2 in. or smaller	63
3/8 in. to 1 in. inclusive	59 1/2
1 1/8 in. to 1 1/2 in. inclusive	64
1 1/2 in. and larger	58

## C.P. Hex regular &amp; hvy.

1/2 in. and smaller	63
3/8 in. to 1 1/2 in. inclusive	59 1/2
1 1/2 in. and larger	58

## Hot Galv. Nuts (All Types)

1/2" and smaller	59
------------------	----

## Semi-finished Hex Nuts

1/2 in. and smaller	63
3/8 in. to 1 1/2 in. inclusive	59 1/2
1 1/2 in. and larger	58

(Add 25 pct for broken case or keg  
quantities)

## Finished

1" and smaller	58
----------------	----

## Rivets

1/2 in. and larger	Base per 100 lb \$10.85
7/16 in. and smaller	Pct Off List 26 1/2

## Cap Screws

Discount (Packages)  
Bright Treated H. C. Heat

New std. hex head, pack- aged	
1/2" diam. and smaller x 6" and shorter	47 34
3/8" 1/2" and 1" diam. x 6" and shorter	31 13
1/2" diam. and smaller x longer than 6"	18 1/2 + 1
3/8", 1/2" and 1" diam. & longer than 6"	5 1/2 + 19 1/2

C-1018 Steel  
Full-Finished  
Cartons Bulk

1/2" through 1/2" dia. x 6" and shorter	47 63
3/8" through 1" dia. x 6"	31 51 1/2
Minimum quantity—1/2" through 3/8" diam., 15,000 pieces; 1/16" through 1/2" diam., 5,000 pieces; 3/8" through 1" diam., 2,000 pieces.	

## Machine Screws &amp; Stove Bolts

Plain Finish	Discount	Mach. Screws	Stove Bolts
Cartons Bulk	Quantity	19	31
To 1/2" diam. Incl.	25,000-200,000	9	54
5/16 to 1/2" diam. Incl.	15,000-100,000	9	54
All diam. over 3" long	5,000-100,000	—	54

## Machine Screw &amp; Stove Bolt Nuts

In cartons	Discount	Hex	Square
Quantity	16	19	
In Bulk			
1/2" diam. & smaller	15,000-100,000	7	9

## CAST IRON WATER PIPE INDEX

Birmingham	119.0
New York	131.4
Chicago	133.4
San Francisco-L. A.	140.2

Dec. 1955 value, Class B or heavier

6 in. or larger, bell and spigot pipe. Ex-

planation: p. 57, Sept. 1, 1956 issue.

Source: U. S. Pipe and Foundry Co.

## REFRACTORIES

Fire Clay Brick	Carloads per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$128.00
No. 1 Ohio	128.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	114.00
No. 2 Ohio	98.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$2.00)	20.00

## Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$140.00
Childs, Hays, Pa.	145.00
Chicago District	150.00
Western Utah	144.00-165.00
California	170.00
Super Duty	
Hays, Pa., Athens, Tex., Wind- ham, Warren, O., Morrisville	150.00-157.00
Silica cement, net ton, bulk, Latrobe	26.50
Silica cement, net ton, bulk, Chi- cago	24.00
Silica cement, net tons, bulk, Ens- ley, Ala.	25.50
Silica cement, net ton, bulk, Mt. Union	23.00
Silica cement, net ton, bulk, Utah and Calif.	35.00

## Chrome Brick

Standard chemically bonded, Balt.	\$98.00
Standards chemically bonded, Curt- ner, Calif.	108.00
Burned, Balt.	92.00

## Magnesite Brick

Standard, Baltimore	\$121.00
Chemically bonded, Baltimore	109.00

## Grain Magnesite

St. 1/2 to 1/4-in. grains	
Domestic, f.o.b. Baltimore in bulk	\$69.40
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	43.00
In bulk	49.00
In sacks	49.00

## Dead Burned Dolomite

Per net ton	
F.o.b. bulk, producing points in: Pa., W. Va., Ohio	\$16.00
Midwest	16.35
Missouri Valley	15.00

## METAL POWDERS

Per pound, f.o.b. shipping point, in ton  
lots, for minus 100 mesh

Swedish sponge iron f.o.b.	
Riverton, N. J., ocean bags	8.50¢
Canadian sponge iron, Del'd in East, carloads	9.5¢
Domestic sponge iron, 98+ % Fe, carloads lots	8.5¢
Electrolytic iron, annealed, imported 99.5+ % Fe	27.5¢
domestic 99.5+ % Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+ % Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	22.0¢
Carbonyl iron size 5 to 10 micron, 98%, 99.8+ % Fe	86.0¢ to \$1.55
Aluminum freight allowed.	38.00¢
Brass, 10 ton lots	\$7.50¢ to \$9.00¢
Copper, electrolytic	49.75¢
Copper, reduced	49.75¢
Cadmium, 100-199 lb, 95¢ plus metal value	
Chromium, electrolytic 99.85% min. Fe .03 max. Del'd	\$5.00
Lead	8.90¢ plus metal value
Manganese	70.0¢
Molybdenum, 99%	\$3.35 to \$3.85
Nickel, unannealed	\$1.00
Nickel, annealed	\$1.06
Nickel, spherical, unannealed #80	\$1.13
Silicon	43.50¢
Solder powder, .70¢ to .90¢ plus met. value	
Stainless steel, 302	99.0¢
Stainless steel, 316	\$1.32
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	\$4.20
Zinc, 10 ton lots	\$8.75¢ to \$2.50¢

**any time of the day**



**any place**



**in the world**

**KLAFF**

**STAINLESS**  
**scrap**

(nickel chrome & jet alloys too)

**H. KLAFF & CO., INC.,** Ostend & Ridgely Sts., Baltimore 30, Md. . . LExington 9-6721

**WORLD'S No. 1 SPECIALIST IN STAINLESS STEEL SCRAP**

*January 3, 1957*

375

# Ferroalloy Prices

(Effective Jan. 1, 1957)

## Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, 39-100% max. Si.

0.02% C	41.50	0.20% C	38.50
0.03% C	41.00	0.50% C	38.25
0.06% C	39.50	1.00% C	37.50
0.10% C	39.00	1.50% C	37.35
0.15% C	38.75	2.00% C	37.25
4.00-4.50% C, 67.70% Cr, 1-2% Si	27.75		
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si	27.75		
0.025% C (Simplex)	34.75		
0.10% C, 50-52% Cr, 2% max Si	35.75		
8.50% max. C, 50-55% Cr, 3-6% Si	24.00		
8.50% C, 50-55% Cr, 3% max Si	24.00		

## High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

## Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	\$1.31
0.50% max. C	1.31
9 to 11% C, 33-31% Cr, 0.75% Fe	1.40

## Electrolytic Chromium Metal

Contract prices per lb of metal 2" x D plate (3/4" thick) delivered packed, 99.80% min. Cr (Metallic Base) Fe 0.20 max.

Carloads	\$1.29
Ton lots	1.31
Less ton lots	1.33

## Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Contract price, carloads, delivered, lump, 3-in. x down, per lb of Cr, packed.

Carloads	44.65
Ton lots	48.95
Less ton lots	51.45

## Calcium-Silicon

Contract price per lb of alloy, lump, delivered, packed.

30-33% Cr, 60-65% Si, 3.00 max. Fe.	25.65
Carloads	27.95
Ton lots	29.45

## Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered, packed.

16-20% Ca, 14-18% Mn, 53-59% Si.	24.25
Carloads	26.15
Ton lots	27.15

## SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe 1/2 in. x 12 mesh.

Ton lots	20.15
Less ton lots	21.40

## V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	17.20
Ton lots	18.70
Less ton lots	19.95

## Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.50
Ton lots to carload packed	19.65
Less ton lots	20.90

## Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.75
Johnstown, Pa.	11.75
Sheridan, Pa.	12.75
Philo, Ohio	11.75
S. Duquesne	11.75

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed	17.20

## Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	Price
16 to 19%	3% max.	\$97.50
19 to 21%	3% max.	99.50
21 to 23%	3% max.	102.00

## Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	45.75
Carload, packed	47.25
Ton lots	

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	\$3.00
Ton lots	35.00
250 to 1999 lb	37.00
Premium for hydrogen-removed metal	0.75

## Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn.

	25.50
--	-------

## Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

Carloads	Ton	Less	
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

## Silicomanganese

Contract basis, lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	13.80
Ton lots	15.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	15.10
Ton lots, packed	17.50

## Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$100.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.

## Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

Ton lots	Carloads
96.50% Si, 2% Fe	23.95
98% Si, 0.75% Fe	24.45
	23.15

## Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	7.70
Ton lots, packed	10.50

## Electric Ferrosilicon

Contract prices, cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si	13.90	75% Si	16.80
65% Si	15.65	85% Si	18.50
		90% Si	19.90

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

Ton lots	Cast	Turnings	Distilled
	\$2.05	\$2.95	\$3.75
Less ton lots	2.40	3.30	4.55

## Ferrovandium

50-55% V contract, basis, delivered, per pound, contained V, carloads, packed.

Openhearth	3.20
Crucible	3.30
High speed steel (Primos)	3.40

## Alsiifer, 20% Al, 40% Si, 40% Fe.

Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	10.65¢
Ton lots	11.80¢

## Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound

Contained Mo.

	\$1.28
--	--------

## Ferrocolumbium, 50-50%, 2 in. x D contract basis, delivered

per pound contained Cb.

Ton lots	\$6.90
Less ton lots	6.95

## Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract

basis, del'd, ton lots, 2-in. x D per lb con't Sb plus Ta.

	\$4.95
--	--------

## Ferromolybdenum, 55-75%, 200-lb

containers, f.o.b. Langeloth, Pa., per pound contained Mo.

	\$1.54
--	--------

## Ferrophosphorus, electric, 23-

26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton

10 tons to less carload	\$110.00
-------------------------	----------

## Ferrotitanium, 40% regular grade

0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti.

	\$1.35
--	--------

## Ferrotitanium, 25% low carbon,

0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti.

	\$1.50
Less ton lots	\$1.55

## Ferrotitanium, 15 to 18% high

carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton

	\$215.00
--	----------

## Ferrotungsten, 1/2 x down,

packed, per pounds contained W, ton lots delivered

	\$3.15
--	--------

## Molybde oxide, briquets, per lb

contained Mo, f.o.b. Langeloth, Pa.

	\$1.32
--	--------

## Simanal, 20% Si, 20% Mn, 20%

Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

## Vanadium oxide, 86-89% V<sub>2</sub>O<sub>5</sub>

contract basis, per pound contained V<sub>2</sub>O<sub>5</sub>

	\$1.38
--	--------

## Zirconium contract basis, per lb

of alloy

35-40% f.o.b. freight allowed, carloads, packed	27.25¢
12-15% del'd lump, bulk-carloads	9.25¢

## Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload	\$5.50
-----------------	--------

## Bortam, f.o.b. Niagara Falls,

Ton lots, per pound.

	45¢
--	-----

## Corbortam, Ti 15-21%, B 1-2%,

Si 2-4%, Al 1-2%, C 4-5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound	14.00¢
--------------------	--------

## Ferroboreon, 17.50 min. B, 1.50%

max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.

F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up	.85
10 to 14% B	1.20
14 to 19% B	1.20
19% min. B	1.50

## Grainal, f.o.b. Bridgeville, Pa.,

freight allowed, 100 lb and over

No. 1	\$1.05
No. 79	50¢

## Manganese-Boron, 75.00% Mn,

15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots	\$1.46
Less ton lots	1.57

## Nickel-Boron, 15-18% B, 1.00%

max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots

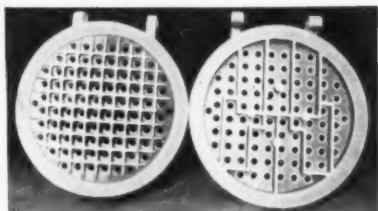
	\$1.95
--	--------



# KUTZTOWN *Skill*

IN MACHINING CASTINGS . . .

Heat Exchanger channels drilled for tubes. These castings show an interesting partition rib construction.



Kutztown's Machine Shop is filled with many different types of machines, but equipment alone does not give a true picture of our Machine Shop . . . it is the machinists that matter! Our machinists, in whose hands are placed the finishing of some of the most intricate castings, have the training, experience and the necessary attitude toward their work, that, added together, means the finest of finished product. Our tool makers, our layout men, our inspectors and our handlers all bring to their work a skill, an understanding that assures satisfaction to those who turn their machining over to Kutztown Foundry!

We have equipment capable of boring, turning and facing a casting up to 16 ft. in diameter. Our planers can easily finish work up to 16 ft. in length on 60 in. open side tables. Drill presses, with up to 7 ft. arms, handle adequately the drilling of large castings. WRITE FOR DESCRIPTIVE FOLDER ON FACILITIES!

No order is too large or small for Kutztown to handle. Your inquiry is most welcome.

We'll be happy to place your name on our mailing list to receive regular issues of the "Kutztown REVIEW."

**KUTZTOWN FOUNDRY & MACHINE CORP.**  
KUTZTOWN, PENNSYLVANIA



## Effective Quality Control through Accurate Hardness Tests

Solve quality control problems with the King Portable Brinell Hardness Tester. Take faster, more accurate hardness readings on heavy, odd-shaped metal parts without elaborate fixturing or cutting samples. The King Portable uses a 3000 kg. load on a 10 mm. ball with automatic relief. Intermediate loads as desired. Weighs less than 30 lb. and takes guaranteed accurate tests anywhere. King Testers are the standard of dependability in portable hardness testing equipment around the world. Write for details and specifications.

**KING TESTER CORPORATION**  
448 NORTH 13th ST. PHILADELPHIA 23 PA.

### DESIGNED FOR INDUSTRIAL SERVICE



## HEAVY DUTY GONDOLA CARS

With Completely New Body

Inside Length—40' 0"  
Floors, Sides and Ends— $\frac{3}{8}$ "  
Fishbelly Side Sill—28" in depth  
Extra Heavy Top, Side and End Angles

Body Capacity—100-Tons  
70-Ton Capacity Trucks  
Sturdy Ends  
Cast Steel "U" Section Side Frames

Inside Height—32" or higher, as per your specifications.

We would be pleased to receive your inquiries.

**ORTNER COMPANY—3181 Linwood Rd.—Cincinnati 8, Ohio**

January 3, 1957

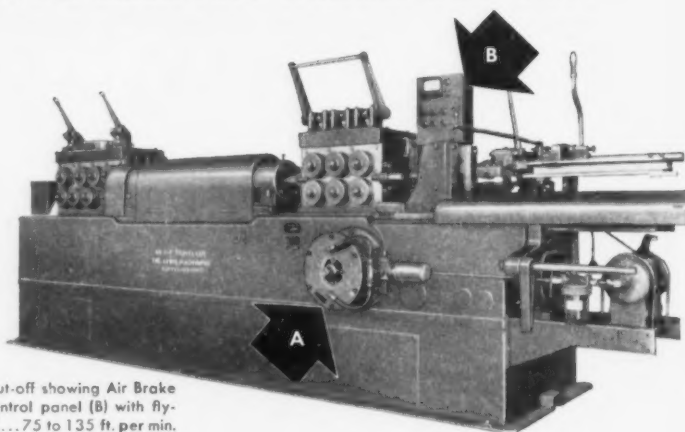
377

# SUPERIOR QUALITY CONTROL!

**WITH LEWIS TRAVEL-CUT WIRE STRAIGHTENING AND CUTTING MACHINES  
EQUIPPED WITH AIR CLUTCH, AIR BRAKE AND VARIABLE SPEED DRIVE**

Lewis engineers have added three important improvements to their famous Travel-Cut Wire Straightening and Cutting Machines, 1. Wichita Air Clutch, 2. Wichita Air Brake, 3. Reeves Motodrive or similar variable speed drive, for SUPERIOR QUALITY CONTROL. Assures greater accuracy and produces quality rod with a minimum of spot swell. Lewis Machines are available in 34 models to handle from .012" to 3/4" dia. at speeds up to 200 FPM.

NEW BROCHURE ON REQUEST



No. 11-F Travel-Cut with Flying Shear Cut-off showing Air Brake (A) (guard removed) and push-button control panel (B) with fly-wheel speed tachometer. Cap. 1/2" to 3/4" ... 75 to 135 ft. per min.

THE

**LEWIS**

MACHINE COMPANY

3440 EAST 76th STREET  
CLEVELAND 27, OHIO



prepared to meet your requirements  
**Service Foundry**

A DIVISION OF AVONDALE



Service Foundry is prepared to meet your most exacting requirements—and can promise you speedy service. The most modern foundry equipment, plus skilled engineers, pattern makers, foundry men and machinists make it possible to perform every job with skill, care and precision. Service can provide clean, sound pattern-true castings in iron, steel and non-ferrous materials—gear cutting and machine work. Next time, call for "SERVICE" . . .



**SERVICE FOUNDRY** a division of **AVONDALE Marine Ways, Inc.**

416 Erato St. • New Orleans, U.S.A.

P. O. Box 1030 • New Orleans 8, U.S.A.

Cable Address: "Serfdry"

IT'S BETTER IF IT CONTAINS MOLY



## Up to 1% Moly in carburizing steels gives required hardenability economically

Why limit the use of molybdenum to the .15/.25% Mo and .20/.30% Mo contents of the traditional grades? For the contributions of moly do not stop there. Laboratory tests and production runs prove that as molybdenum contents increase up to 1%, hardness increases progressively. A wide range of case and core hardenabilities, therefore, can be obtained — economically, too.

Tests with a series of molybdenum-manganese steels show that these compositions give higher case hardness on a direct quench than other steels of comparable core hardenability. One extensively tested composition, for example, is 0.5% Mo — 0.5% Mn steel. It shows longer

life, and is lower in cost than steels previously used. And it produces a higher case hardness with similar or less distortion. What's more, tool life and surface finish are equal or better. Good reasons why several companies have already adopted this grade for automotive gears and other critical applications.

If you use carburizing steels, see what a higher molybdenum content can do for you. Part of the story is contained in the technical article "New Carburizing Steels For Critical Gearing." For your copy, or other technical data, write Climax Molybdenum Co., Dept. 2, 500 Fifth Avenue, New York 36, N. Y.

# CLIMAX MOLYBDENUM



# OLSON

## MANUFACTURING COMPANY

100 PRESCOTT ST., WORCESTER 5, MASS.

Representatives: New York • Philadelphia


*Screw Machine Products since 1913*

1/8" to 2 5/8" CAPACITY


STEEL • BRASS • ALUMINUM




QUALITY . . . . . DEPENDABILITY . . . . . EXPERIENCE



## Standardized set-up appliances




**FOR  
MACHINE TOOLS**




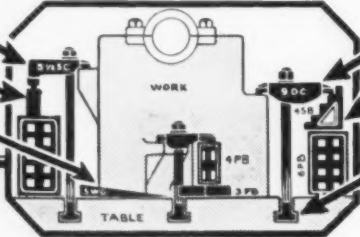
*Why Force Your Men to waste time on machine tool set-ups when CAD Standardized Appliances will convert this non-productive time into productive labor?*

*Why Ruin Machine Table Slots with ordinary bolts when CAD Bolts are designed to fit T Slots?*

The CAD Bolt is a standard machine table bolt, made of steel with full threads, ready for use when you receive it.







**WRITE TODAY  
FOR BULLETIN A-90**

**STANDARD SHOP EQUIPMENT CO.**  
SET-UP APPLIANCES FOR MACHINE TOOLS  
8172 Tinicum Ave., Philadelphia 42, Pa.



# See why Tool Engineers call these heavy producers, **"MOST MODERN MACHINES OF THEIR TYPE"**

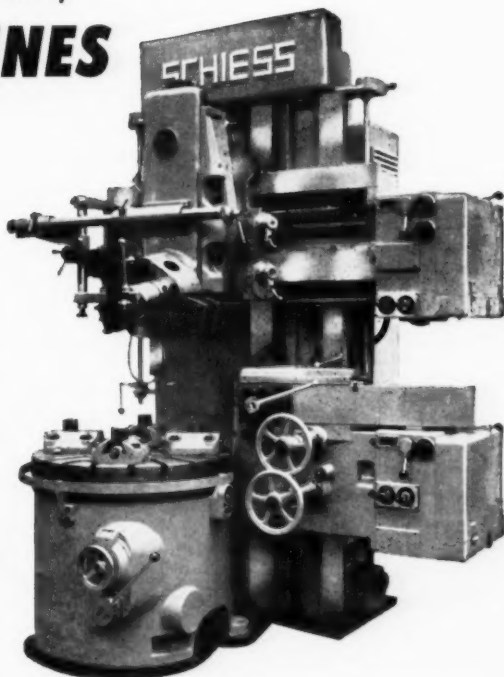
**Hydraulic pre-selection of speeds** set by handwheel and read on illuminated dial. 16 spindle speeds—ratio 1:50—up to 310 rpm for carbide machining on Model KE 100. Table runs on tapered roller bearings.

**Fingertip control for direction of feed and rapid traverse** with spring-loaded mono-levers for normal direction plus angular compound feeds. Mono-levers move in same direction as desired feed or traverse movement, simplify correct setting by operator. Specially designed electro-magnetic disc clutches disengage feed instantly with no over-riding or coasting.

**Counterbalanced cross rail and side head.** Single lever unlocks, raises or lowers, and locks cross rail simultaneously by electro-mechanical controls. *No bolts or nuts to loosen or tighten by hand.*

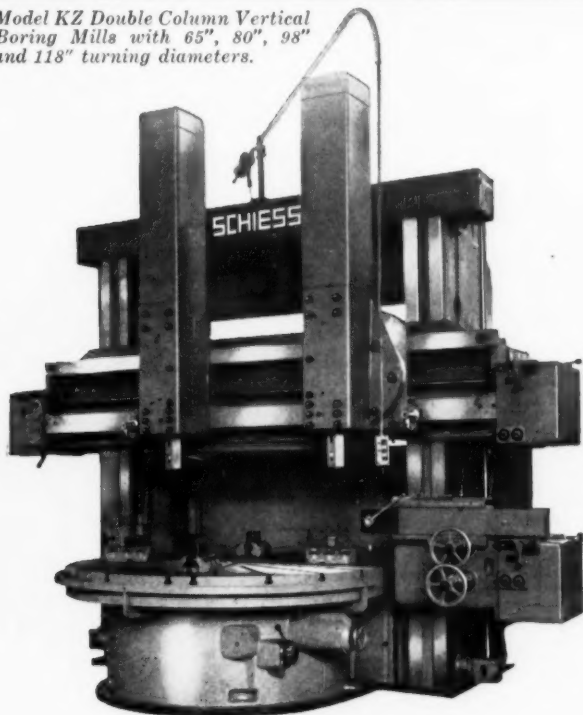
**Magnetic dry particle clutch** provides vibration-free drive for smooth surface finish. Power is transmitted via belt to clutch from main motor mounted on left side of machine. Instantaneous braking is assured by magnetic dry disc brake.

**Copying attachment with electric tracer** for use on cross rail or side head.



*Model KE Single Column Vertical Turret Lathes with 40", 50" and 65" turning diameters for high-speed carbide machining.*

*Model KZ Double Column Vertical Boring Mills with 65", 80", 98" and 118" turning diameters.*



## **All operating features of KE Series Vertical Turret Lathes are combined in SCHIESS KZ DOUBLE COLUMN VERTICAL BORING MILLS, PLUS—**

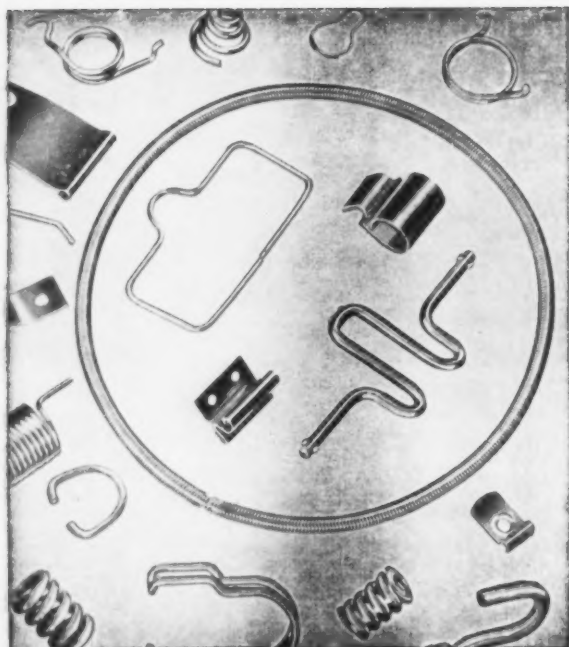
Heads equipped with steel octagon rams can be swiveled—have automatic feed in vertical, horizontal and angular direction and are independent of one another as to amounts and direction of feed. Table operated by three-button pendant control. Standard model KZ Double Column Vertical Boring Mills are available with 65", 80", 98" and 118" turning diameters.

Get to know these products of Europe's largest builder of heavy machine tools. Parts and service are as close as Pittsburgh. An American Schiess engineer will be happy to help you size up these heavy producers for your heavy production needs. Write for catalogs and complete specifications on these and all Schiess KE machines.

engineering division

**SCHIESS**  
 AMERICAN SCHIESS CORPORATION

1232 Penn Avenue, Pittsburgh 22, Pa.



#### COIL SPRING SAYS:

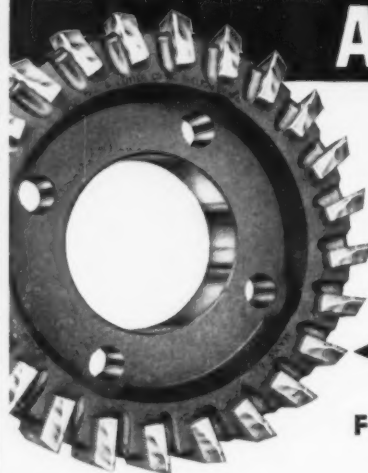


Springs are our business. Big springs, little springs. Any shape, any quantity. When you rely on U. S. you can be sure of springs, wire forms and small parts that operate according to specifications. That's because our special inspection department using the latest testing devices continually check the quality of our production. Isn't this the spring news you want in order to help you save time and money? Call U. S. Steel Wire Spring today.

*No order too large or too small!*

**The U. S. STEEL WIRE SPRING Co.**  
7800 FINNEY AVE. • MICHIGAN 1-6315  
CLEVELAND 5, OHIO

## PRODUCTION TOOLS BY **APEX**



← **MEDIUM  
DUTY  
FACE MILLER**

This milling cutter can be had in fine tooth or heavy duty style when required. Blades are adjustable for wear. Furnished with H.S., cobalt or carbide tipped blades. Body DROP FORGED and heat treated.

Send for catalog. Service engineers will gladly co-operate with you on tooling.

THE APEX TOOL & CUTTER CO., SHELTON 12, CONN.



### ELECTRIC FURNACE **STEEL CASTINGS**

**CARBON • ALLOY • STAINLESS  
SAND OR SHELL MOLDED**

"C" Steel Castings—sand or shell molded—possess qualities far more interesting than the mere strength of steel. For, in addition to strength they provide more efficient design—better weight-strength ratio—and greater fatigue resistance, i.e., longer life and less replacement. Furthermore "C" Steel Castings, because they are truly foundry engineered from pattern to final casting, require minimum machining and provide better fit plus fast assembly.

If you are interested in castings, the know-how, experience and engineering knowledge of our staff are at your service upon request.

**CRUCIBLE STEEL CASTING CO.**  
LANSDOWNE 1, PENNA.

IT'S **NICE...**  
TO BE SURE OF YOUR  
**BEARINGS!**

Write for Cat. No. 150

**NICE BALL BEARING CO.**  
NICETOWN • PHILADELPHIA • PENNSYLVANIA

**"CLEVELAND"**  
**SQUARING SHEAR BLADES**

SOLID TOOL STEEL

**INDUSTRY**

Used by EVERY manufacturer of squaring shears as original equipment. Because they are ground to the closest tolerances in the knife industry — "CLEVELAND" shear blades insure maximum cutting life...

Made in 3 grades:  
"Peerless" (high carbon high chrome)  
"Century" (high alloy)  
"Standard" (low alloy)

We make a complete line of knives and shear blades for every industrial need. We have learned a lot about YOUR problems in the past 40 years — ask us.

Manufactured and sold by:

**THE HILL ACME COMPANY**  
CLEVELAND KNIFE DIVISION  
1201 West 65th St. • Cleveland 2, Ohio



**RITCO FORGINGS**

*simplify product designing...  
send parts cost down!*

Whether you're planning a new product... or redesigning an older one... it will pay you to consider the many economy and design features of Ritco "Bright Finish" Forgings.

**THEY'RE STRONGER!** The dense, fibrous structure and controlled grain flow of Ritco Forgings provide maximum strength and toughness at points of greatest shock and stress... improve impact resistance and fatigue strength in parts.

**... CLEANER!** Ritco Forgings are free of flash, voids and blow holes... smoothed to a bright flawless finish.

**... MORE ECONOMICAL!** Because they are held to extremely close tolerances, Ritco Forgings require minimum machining... save hours of time and labor... keep your production costs down. Depending on design requirements, Ritco Forgings can be produced in weights from 1/4 to 15 lbs. in a wide range of metals and alloys.

Forge ahead with Ritco... send blueprints for estimates now!

We also offer complete machining facilities and make Special Fasteners and Upsets. Send us your requirements!

Exclusive New England representative  
for Cleveland Cap Screw Company.

**RHODE ISLAND TOOL CO.**

144 WEST RIVER STREET

PROVIDENCE 1, R. I.

**DYKEM STEEL BLUE**  
Stops Losses  
making Dies and  
Templates



Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

Write for sample on company letterhead  
**THE DYKEM COMPANY**  
2303G North 11th St. • St. Louis 6, Mo.

With DYKEM Steel Blue    Without DYKEM Steel Blue

**CUT SCRAPER TIME**  
END NIGHT CLEANUP & MORNING REBLUING



DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

**THE DYKEM CO., 2303G NORTH 11TH ST., ST. LOUIS 6, MO.**

**GOSS and DE LEEUW**  
MULTIPLE SPINDLE  
**CHUCKING MACHINES**  
Four, Five, Six, Eight Spindles • Work and Tool Rotating Type  
GOSS & de LEEUW MACHINE CO., KENSINGTON, CONN.

more and more manufacturers  
are saying: "Let's use



**GRIFFIN**  
COLD ROLLED STRIP STEEL"

Made to your specifications in all thicknesses from .012 to .375 inches and widths from 1/2" to 19" depending upon gauge

**NARROW ROLLED ROUND EDGE STRIP STEEL** In stock at  
CENTRAL STEEL & WIRE CO.,  
Detroit, Chicago, Cincinnati  
Wm. H. LEONORI & CO., Inc.  
New York City

**GRIFFIN**  
"since 1899"  
MANUFACTURING CO. ERIE, PA.

**PALMGREN** Machine Vises and Rotary Tables



Used in all Industries — Everywhere  
There are 64 different models and types of Palmgren vises, rotary tables, milling attachments and other machine tool accessories — the most complete line of vises and tables available anywhere.

No. 608 6" Swivel Machine Vise, \$99.95    Write for Catalog 204    No. 83 8" Rotary Table, \$79.95

CHICAGO TOOL AND ENGINEERING CO., 8348 S. Chicago Ave., Chicago 17, Ill.

**HOT DIP GALVANIZING**  
JOSEPH P. CATTIE & BROTHERS, INC.  
2520 East Hagert St.  
Phone: Re 9-8911    Phila. 25, Pa.

Versatility counts in  
**HOT DIP GALVANIZING**  
any size or shape product, any size  
order from the smallest to the largest

Excellent facilities  
for export  
shipment

**ENTERPRISE**  
GALVANIZING COMPANY  
2525 E. Cumberland Street    Philadelphia 25, Pa.

**ATLANTIC STEEL PRODUCTS CO.**  
3000 West Sedgley Ave., Phila. 21, Pa.  
From Stock  
**BARS • STRIP • SHEETS • PLATES**

To Lower  
your Overhead.



**BROWNING ELECTRIC**  
TRAVELING CRANES AND HOISTS  
up to 125-TON CAPACITY

**VICTOR R. BROWNING & CO., INC.**    WILLOUGHBY (Cleveland), OHIO

**POOLE**  
FLEXIBLE COUPLINGS  
ALL SIZES AND TYPES  
CATALOG ON REQUEST



**POOLE FOUNDRY & MACHINE CO.**  
1700 UNION AVE., BALTIMORE 11, MD.

**COX** Pipe Cutting and Threading  
Tube Cutting Off  
Metal Scrap Bundling

**MACHINES**

The Cox & Sons  
Company  
Bridgeton, N.J.  
Catalog upon request

ESTABLISHED SINCE 1868

**"DAVIS" KEYSEATER**  
Low in Cost. Durable. Easy to operate.  
Table adjustable for straight or taper keyways.  
Three sizes. Keyways 1/16" up to 1".  
**DAVIS KEYSEATER CO.**  
400 Exchange St., Rochester 8, N. Y.

If It's Action You're After . . .

Advertise it in The Iron Age. Those who make the buying decisions in metalworking watch The Iron Age advertising pages closely.



# Bronze

"Controlled" CASTINGS

## for ENGINEERING and CHEMICAL PURPOSES

By "controlled" we mean that every step in alloying, molding, pouring and cooling is under careful supervision of trained men in our own plant. . . . So, if you require non-ferrous castings (large or small) to meet any of the following conditions, you are safe in bringing your problems to us: Corrosion Resistance; Strength in Tension and Compression; Hardness and Toughness; Pressure Tightness; Erosion Resistance; Frictional Wear Resistance or Fatigue Resistance.

Would you like a copy of our famous 48 page flexible-bound Reference Book entitled, "Bronze Casting Alloys"? If so, write us on your business letterhead.

## AMERICAN MANGANESE BRONZE COMPANY

4701 Rhawn St., Holmesburg, Philadelphia 36, Pa.

ESTABLISHED 1909



## MACLEOD Custom-Built BLAST CLEANING ROOMS

MACLEOD offers complete designing, fabrication, and installation of abrasive blast cleaning rooms, abrasive reclaiming systems, blast generators, and dust collecting systems—designed to meet your specific needs.

The room installation illustrated was custom-built by MACLEOD for the renovation of various types of military vehicles. It is served by a continuous, automatic blast generator, abrasive reclaiming and cleaning system, and a dust collecting system with a 54,000 cu. ft. per minute capacity. The floor is stressed to support vehicles up to 45 tons. Write for descriptive literature on MACLEOD Blast Cleaning Rooms, Cabinets and Machines.



The **MACLEOD** Company

BOX 452, SHARONVILLE, OHIO ESTABLISHED 1897

## SUPERSALESMAN

*100 years' experience . . . has excellent contacts with 97% of the buying power in the metalworking industry. Will make over 169,000 calls every week.*

The **IRON AGE**

Chestnut and 56th Streets

Philadelphia 39, Penna.

# RAILWAY EQUIPMENT FOR SALE

Used - As Is - Reconditioned

## RAILWAY CARS

All Types

## SERVICE-TESTED ® FREIGHT CAR REPAIR PARTS

For All Types of Cars

## LOCOMOTIVES

Diesel, Steam, Gasoline,  
Diesel-Electric

### SPECIAL OFFERINGS 50-TON CAPACITY GONDOLA CARS

Length—46'0"      Drop Ends  
Steel Underframes      Steel Ends  
Steel Sides      Wood Floor  
AB Air Brakes  
**Immediate Delivery!**

## RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon  
Cleaned and Tested

## CRANES

Overhead and Locomotive

## IRON & STEEL PRODUCTS, Inc.

### General Office

13496 S. Brainard Ave.  
Chicago 33, Illinois  
Phone: Mitchell 6-1212

### New York Office

50-B Church Street  
New York 7, N. Y.  
Phone: BEekman 3-8230

**"ANYTHING containing IRON  
or STEEL"**

## THE CLEARING HOUSE

### Used and Rebuilt Machinery—Forecast

What's Ahead? . . . Used machine tool dealers believe 1957 will be a good year. "We are so convinced manufacturers will continue to increase their purchases of used machine tools," says Austin D. Lucas, President of Machinery Dealers National Assn., "that we have just expanded our facilities by one-third our former capacity. The dealers' skill in appraising and buying good machine tools assures our customers that they get real production value, and more manufacturers are coming to us all the time."

Increased sales will come, feels Randy Vinson, Executive Director of the MDNA, because more users now understand the value of used machine tools.

"We realize," says Mr. Vinson, "that our forecast for the used machine tool industry is a bit different from saying the industry expects to do more business or expects to do X% more business or X% less business."

"We believe the industry will sell more units of machine tools in 1957 than it did in 1956 because more buyers understand the advantage of buying used machine tools."

Depreciation Change? . . . "Another reason why the industry believes more people will buy used machine tools in 1957 than in 1956," he adds, "is the prospect of the government's amending the 1954 Internal Revenue Code which will provide the buyers of used machine tools the privilege of using the accelerated method of depreciation."

"The 1954 tax laws permit the buyers of new machine tools to use the accelerated depreciation but to the present time buyers of used machine tools have not been permitted to use the same schedule of depreciation."

The Dealer Knows . . . "Manufacturers," states Mr. Vinson, "can sell their surplus machinery to a dealer to provide them with extra capital in these times of tight

money and use the capital for other needed equipment, thus improving over-all operation. Actually many successful manufacturing firms could not function except for this dealer service. The dealer visits many plants each day, observing and inspecting all types of machines."

"This specialized knowledge is most valuable to his customers who learn to consider seriously his suggestions. Often the manufacturer can improve his production at no cost by selling his present machines and buying others. He may even increase his production and decrease his cost at the same time."

What the MDNA Means . . . "Fifteen years ago used machine dealers established the Machinery Dealers National Association to insure buyers the best possible answers to their machine tool requirements. Now over 200 members meet at least twice a year on a national basis, the 9 regional groups meet each month, and the Board of Directors meets at least each three months to study ways and means of improving service to the user of used machine tools."

Sources of Supply . . . "If a buyer needs one or more tools," Mr. Vinson continues, "he contacts a dealer. If the dealer cannot satisfy his requirements he can enlist the aid of the MDNA which asks other dealers to aid in locating the item."

Market Report: Chicago . . . Tool room equipment demand is at one of the highest points it has reached within the last year or so. Small used tool sales firms are confident this level of demand will hold through the current quarter. Sheet metal equipment is in the same category. Milling machines, though they've been easier in some areas of the East, are very tight in the Midwest. Grinders have been slightly easier but are now getting higher in price and being sought for resale.

# CONSIDER GOOD USED EQUIPMENT FIRST

## Over 20 years Experience

SPECIALIZING IN EQUIPMENT FOR THE FOLLOWING ENUMERATED INDUSTRIES

PLATE WORK and FABRICATING, Including STRUCTURAL, BOILER and TANK PLANTS  
RAILROADS; SHIPYARDS; STAMPING PLANTS; MACHINE SHOPS; POWER PLANTS

WIRE EQUIPMENT for WIRE INDUSTRY, DRAWING, FINISHING, FORMING

ROLLING MILLS, Steel and Non-Ferrous Metals, Hot and Cold

Equipment for FORGING INDUSTRY

BOLT and NUT MACHINERY

### ACCUMULATORS

### AIR COMPRESSORS

Direct Motor & Belted  
Motor Driven  
Oil & Gasoline Driven  
Steam Driven  
Centrifugal

### BALING MACHINES

### BENDERS (Hydr. & Mech.)

### BENDING ROLLS (Plate)

Pyramid & Initial Type

### BOLT & NUT MACHINERY

### BORING MILLS

Car Wheel  
Horizontal  
Vertical

### BRAKES

Press & Leaf Type

### BUILDINGS

### BULLDOZERS

### CRANES

Overhead Electric Travel  
With Runways  
Gantry  
Ladle  
Locomotive  
Mono Rail  
Ore Cranes & Bridges  
Pitt  
Wall

### DIE SINKING MACHINES

### DRAW BENCHES

### ELECTRICAL EQUIPMENT

Generators  
Mill Drive Motors  
Transformers  
Turbines

### FORGING EQUIPMENT

Forging & Upsetting Machines  
Hammers  
Taper Forging Rolls

### FURNACES

Annealing  
Melting, Nonferrous &  
Heat Treating

### GRINDERS

Cylindrical  
Surface

### HEADERS (Hot & Cold)

### KEY SEATERS

### LATHES—Large Sizes, Only

Axle  
Roll  
Wheel

### LEVELLERS

Roller  
Stretcher

### LOCOMOTIVES

Gas  
Electric  
Steam

### MAGNETS

Lifting

### MILLING MACHINES

Planer Type  
Plain & Universal

### NIBBLERS

### PIPE MACHINES

### PLANERS

Closed Housing  
Open Side  
Plate  
Rotary—Column Facer

### PRESSES

Embossing & Coining  
Gap Frame  
Inclinable Bed  
Screw  
Straight Side  
Toggle Drawing  
Trimming

### PRESSES—HYDRAULIC

Flanging  
Forging  
Wheel

### PUMPS

Hydraulic—High Pressure  
Underwriters Fire  
Vertical Triplex

### PUNCHES

Combination Punch & Shear  
Multiple—With Spacing Table  
Beam  
Horizontal

### RIVETERS

### ROLLING MILL EQUIPMENT

Sheet  
Strip  
Bars & Shapes  
Plate  
Hot & Cold  
Gear Reduction Units

### ROLLS

Angle Bending  
Corrugating  
Forming  
Plate Straightening

### ROTARY CONVERTERS

### SAND BLAST EQUIPMENT

### SAWS (Metal Working)

### SCALES

### SHEARS

Alligator  
Angle  
Bar  
Billet  
Gate  
Rotary  
Squaring  
Slitting

### SLITTERS

### SLOTING MACHINES

### SPIKE MACHINES

### STOKERS

### STRAIGHTENERS—For Wire and Bar Stock

Rounds & Shapes

### SWAGING MACHINES

### TESTING MACHINES

### THREAD ROLLERS

### WELDING MACHINES

### WIRE MACHINERY

All Types

Manufacturing

**A. T. HENRY & COMPANY, INC.**

50 CHURCH ST., NEW YORK CITY 8

Telephone COrtlandt 7-3437

Equipment

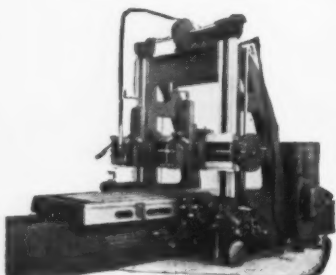
Confidential Certified Appraisals  
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service  
Surplus Mfg. Equipment Inventories Purchased

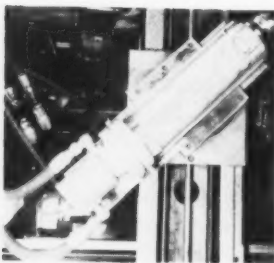
January 3, 1957

387

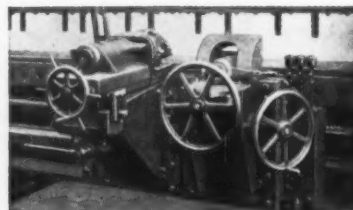
## HEAVY MACHINES — CONVERSIONS



60" x 60" x 14' NBP 4 Hds. Rev. Mo. Drive  
48" x 48" x 18' NBP 3 Hds. Rev. Mo. Drive  
48" x 48" x 16' NBP 2 Hds. or 4 Hds. Rev. Mo. Drive

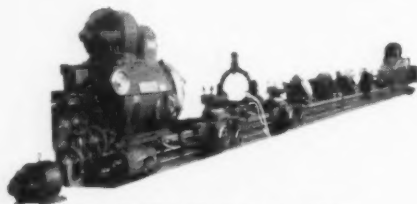


Milling or grinding heads up to 150 H.P. Any given speed ranges; 40 to 1500 RPM or 1500 to 7000 RPM.



36' Sellers, Mod. C. H. Duty Planer Rev. Mo. Drive  
36' Southwark Plate Planer, Rev. Mo. Drive  
32' Sellers, Mod. B Plate Planer, Rev. Mo. Drive  
36' J. Plate Edge Miller Var. Spd. Mo. Dr.

**STRAIGHT OR CONTOUR WORK PRODUCE UNUSUAL JOBS AT GREAT SAVINGS WHEN EQUIPPED WITH MODERN DEVICES AND ATTACHMENTS**



48" H. Duty Niles lathe for boring and trepanning: Single or double head stocks up to 85' long.



36 foot—125 ton—Vertical Boring Mill Table with 29 foot diameter gear with variable 6/1 drive and control suitable for turning, boring, grinding or any conversion or special purpose condition. Practically new. Will quote completed for your special requirements.

## MACHINE TOOLS SALES COMPANY, INC.

36 South Delaware Ave.

Philadelphia 6, Penna.

WAlnut 2-1120

## Lewis Continuous Rod or Bar Finishing Rolling Mill

- 4—10½" x 16" Two High Lewis Rolling Mill Stands, Open Top Construction, Enclosed Screws Downs.
- 4—Individual Pinion Stands with Spindles, Couplings and Shoe Plates, etc.
- 1—1250 HP Lewis Reduction Gear, with Four Output Spindles for Driving Individual Stands.

**BRAND NEW**

**NEVER INSTALLED**

**LOCATED IN OUR PITTSBURGH STOCK**

9" 3 HIGH BAR MILL, 5 Stands, Pinion Stand, Shoe Plate, Top and Bottom Screws.

32" x 20" x 110" 3 HIGH PLATE MILL, Complete with Electric Screwdown, Pinion Stand, Front and Back Tables, Run-out Table, 9 Roll Plate Leveller & Furnace.

#6 MEDART CENTERLESS BAR TURNING MACHINE, 1" to 6" Capacity, 50 HP. NEW 1941.

1½" DIA. MACKINTOSH-HEMPHILL 6 ROLL BAR STRAIGHTENER, 1½" Dia. Capacity, 300 FPM, Complete with 2—40 HP Motors.

40 TON MORGAN LADLE CRANE, 55' Span, NEW 1940.

42" x 30' NILES ENGINE LATHE, Two Carriages, Geared Head, Rapid Traverse.

500 KW WESTINGHOUSE SYNCHRONOUS MOTOR GENERATOR SETS, 250 Volts DC 2300 Volts AC, 900 RPM. (We have two identical Sets).

1650 TON LOEWY-HYDROPRESS EXTRUSION PRESS, 3 column, horiz., 4250 P.S.I., 65" stroke, complete with billet container, etc. Excellent condition—in stock.

**TIPPINS MACHINERY CO.**  
**PITTSBURGH 6, PA.**

Emerson  
1-3400

**TIPPINS**

### DIESEL LOCOMOTIVES 44 TON & 25 TON G. E. DIESEL ELEC. STEEL SHEET PILING

215 TONS BETH. AP-3—20', 24' & 30'  
177 TONS CARNegie M-116—31', 40' & 50'  
300 TONS CARNegie M-27—40'

**R. C. STANHOPE, INC.**  
60 E. 42nd St. New York 17, N. Y.

### LIFTING MAGNETS

A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.

Magnet specialists since 1910

**Goodman Electric Machinery Co.**  
1040 Broad St. Newark 2, N. J.

## FOR SALE GOOD CONDITION

2—B & W Fire Tube Waste Heat Boilers, set single. With superheaters, induced draft fans, and soot blowers. 7797 sq. ft. heating surface each unit. 250 p.s.i. design pressure. 200 p.s.i. operating pressure at superheater outlet. 450 deg. F. total temperature. 15,000 lbs. capacity steam/hr. Boilers certified annually for operation at a pressure not to exceed 250 lbs. per sq. in. Scheduled for release January, 1957. Inspect now.

### Kaiser Steel Equipment Dept.

612 South Flower St., Los Angeles 17, California  
Phone: MAdison 6-8211, Extension 33

## GOOD QUALITY TOOLS

24"x276" LANDIS Type "B" Hydraulic Plain Cylindrical Grinder.

2H, 2K & 3H K & T Plain & Vertical Millers.

16"x16"x48" THOMPSON Type "C" Hydraulic Surface Grinder.

Nos. 1B x 74" and 1½B x 81" PRATT & WHITNEY Deep Hole Drills.

**WIGGLESWORTH INDUSTRIAL CORPORATION**  
62 Border St. E. Boston, Mass.



# MOTORS • GENERATORS • TRANSFORMERS

## MOTOR GENERATOR SETS • CONTROLS

### COMPLETE VARIABLE VOLTAGE DRIVES

32 YEARS (1924-1956)  
SERVING INDUSTRY

BUY FROM ONE OF AMERICA'S LARGEST STOCKS ENGINEERED AND REBUILT BY SPECIALISTS

#### SPECIAL

(5)—3500 KW Allis-Chalmers 3-unit Motor Generator Sets, each set has (2) 1750 KW Generators 350 VDC, 5000 amps, 314 RPM., driven by 5000 HP, synchronous motor 13800/6900/4160 V., 3 Ph., 60 Cy. with 40 KW & 10 KW exciters. With generators in parallel each set rated 3500 KW, 350 VDC., in series 700 VDC. Complete with magnetic starting equipment all rotating units enclosed for forced ventilation.

#### MOTOR GENERATOR SETS

Qu.	KW	Make	R.P.M.	Volts D.C.	Volts A.C.
1	1500	G.E.	514	250	4000/2300
1	1250	G.E.	720	600	4160/2400
2	720/850	Whse.	900	600/710	4160/2400
1	500	Ch. Wh.	720	275/600	2300
2	500	Whse.	1200	125/250	2300/440
1	300 (3-unit)	Al. Ch.	1200	250/300	2300
1	300	G.E.	1200	250/275	2300
1	200	Ch. Wh.	1200	250	4000/2300
1	175	G.E.	1200	250	440/220
1	150	G.E.	1200	250	4600/2300
2	150	Rel.	1200	125	2300
2	150	Whse.	1200	250	2300/440
1	100	Ch. Wh.	1200	125	440
1	100	Al. Ch.	1200	250	4600/2300
1	100	Whse.	1200	250	440

#### SYNCHRONOUS MOTORS

Qu.	KW	Make	P.F.	Volts	R.P.M.
1	2500	Whse.	80	4160/2300	720
1	2000	Whse.	80	2200	900
1	2000	Whse.	80	2200	180
2	1750	G.E.	100	2200	3600
1	1500	Whse.	80	2300	514
1	800	El. Mch.	80	440	1200
1	620	G.E.	80	2200/440	300
1	700	G.E.	80	2200	720
1	450	Whse.	100	2200	128.5
3	350	G.E.	100	23—	900
1	300	G.E.	100	2300	720
1	290	Whse.	80	440/220	600
1	300	G.E.	80	2200	600
2	250	El. Mch.	70	2300	1200
1	250	Whse.	80	440/220	600
1	200	Al. Ch.	100	2200	514
1	200	G.E.	80	440/220	450
1	200	Al. Ch.	100	2300	360
1	150	G.E.	100	2300	900
1	150	El. Mch.	80	220	720
3	135	G.E.	80	4000/2200	1200
1	125	G.E.	80	2200	900
2	100	Whse.	80	440/220	1800
1	100	Ideal	80	440/220	900
2	100	G.E.	80	440/220	600
1	100	El. Mch.	100	440/220	360

#### DIRECT CURRENT MOTORS

Qu.	HP	Make	Type	RPM
1	xx 1500	Whse.	Encl. Rev.	600
1	xx 1500	G.E.	Encl. Rev.	600
1	805	Whse.	Encl. Rev.	168
1	700	Whse.	Encl.	300/700
2	600	Al. Ch.	Mill	300/600
2	600	Whse.	Mill	110/220
1	300	Whse.	Mill	300
2	275	Whse.	Mill	425/850
1	200	El. Dy.	Fed. Brg.	400/1200
1	175	G.E.	CD 175 A	850/1025
1	xx 150	Whse.	Mill	300/720
1	125	Whse.	SK 184	575/850
1	125	G.E.	MTV	400/600
1	80	Rel.	651 T	575/1150
1	60/75	Whse.	SK 151	250/1000

All above 230 VDC except where marked xx  
xx—Fed. Brg. Mill design 525/600 VDC  
Rev.—Designed for reversing Service

(3) G.E. 400 KW sealed Ignitron Mercury Arc Rectifiers 250 VDC 1600 amps, complete with A.C. & D.C. Cubicles and 475 KVA Pyranol Transf. 2400 V, 3 Ph. 60 Cy. primary.

#### MILL AND CRANE MOTORS WESTINGHOUSE

(35)—K-1-2-3-4-5-6-7-8-9  
(74)—MC-20-30-40-50-60-70-80-90-100  
(18 of these are type MCB)  
(6)—MC-21-31-41

#### GENERAL ELECTRIC

(46)—CD-1803-3-6-7-8-9-10-11  
(16)—CD-1822-21-25-26-28-29-30  
(19)—MD-101-2-3-4-1½-6-8-9  
(6 of these are type MDB)  
(32)—MD-MDN-MDP-102-4-6-8-10-12-14-20

#### CROCKER-WHEELER

(27)—SW-7½-10-15-AW-A2W-BW-DW-FW  
We also have a large stock of Electric Brakes, Drum type and Magnetic Control Panels.  
Heavy Duty Mill Type Slip Ring motors, pedestal bearings, mounted on Stator shifting Bases, all 3 phase, 60 cycle.

Qu.	HP	Make	Type	Volts	RPM
1	2500	G.E.	MT	2200	240
1	1800	Whse.	CW	6600/4000	277
2	1800	Whse.	CW	2200	252
1	xx 1200	G.E.	MT	2200	489
1	xx 1000	G.E.	MT	2200	365

xx—25 cycle.

15-Ton MORGAN ELECTRIC GENTRY CRANE, 3 motors, 440/220 V, 3 ph., 60 cy., 48'-0" bet. legs, 19'-2" overhang each end total. Hook travel 72'-0", total Bridge length 86'-4". Max. lift 30'-6". All G.E. motors and control, protected walkway full length each girder, enclosed cab in center of bridge. Still erected can be inspected under power. PRICED ATTRACTIVELY FOR IMMEDIATE PURCHASE AND SHIPMENT.

#### TRANSFORMERS (Power) Outdoor Oil Cooled

Qu.	KVA	Make	Phase	Voltage
3	2000	Al. Ch.	1	26400/12200-2390/4140Y
3	1667	G.E.	1	4800 - 480
3	1000	Al. Ch.	1	33000/29700-2300/4000Y
3	1000	G.E.	1	22000/19800-2300/4000Y
3	500	Kuhlman	1	13860/12540-230/460Y
3	333	G.E.	1	13200/11880-2300/4000Y
3	333	Kuhlman	1	13200/11880-240/480
6	333	American	1	2400/4160Y-120/240
1	300	Whse.	3	11500 - 440
1	150	Kuhlman	1	13200/11880-120/240

SPECIAL (4) 225 KVA Whse., Dry type AVR, 2400/4160Y - 250/144.5 secondary

#### GENERAL PURPOSE SLIP RING MOTORS

Qu.	HP	Make	Type	Volts	RPM
2	2500	Whse.	CW	4600/2300	720
1	1000	Whse.	CW	2300	441
1	800	G.E.	MT	2300	
1	750	G.E.	1-M	2200	400
1	700	Whse.	CW	2300	205
2	500	Al. Ch.	ARY	2200	505
1	500	G.E.	1-M	2300	450
1	450	Whse.	CW	2200	440
1	400	Al. Ch.	ARY	2200	505
1	400	Whse.	CW	2200	290
1	350	G.E.	MT112	2200	450
1	300	Whse.	CW	2300	1200
1	250	Al. Ch.	ANY	440	720
1	250	G.E.	MT114	2200	300
1	200	G.E.	1-13R-M	2200	1760
2	200	G.E.	1-17-M	2200	585
1	200	G.E.	1-14-M	2200	490
1	150	Al. Ch.	ANY	440	705
1	150	Whse.	CW	4160/2200	585
1	150	Whse.	CW1000	440	483
1	100	Whse.	CW	440/220	1160
1	100	Whse.	CW	440/220	870
1	100	El. Dy.	EDX612	2300	900
2	100	G.E.	MT562	140/220	600
2	100	G.E.	1-13A-M	2300	495
1	100	Al. Ch.	ANY	440	430

We can supply full magnetic or manual control for any of the above items.



# T. B. MACCABE COMPANY

4302 CLARISSA STREET

PHILADELPHIA 40, PENNA.

CABLE ADDRESS

"MACSTEEL" PHILADELPHIA, PA.

PHONE

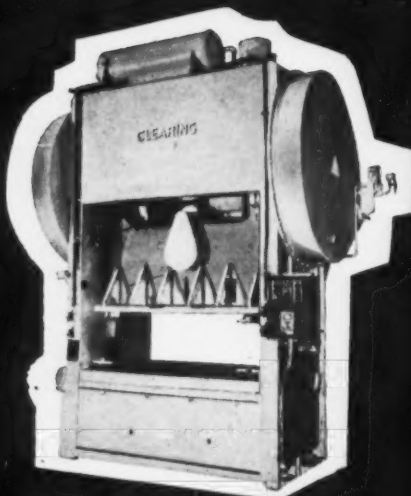
DAVENPORT 4-8300

# WORLD'S LARGEST STOCK STAMPING PRESSES

REBUILT

GUARANTEED

BLISS  
CLEARING  
CLEVELAND  
FERRACUTE  
HAMILTON  
L & J  
NIAGARA  
TOLEDO  
V & O



OPEN BACK INCLINABLE  
STRAIGHT SIDE  
(Single-Double Crank)  
HORNING  
KNUCKLE JOINT  
STILES TYPE  
TOGGLE DRAWING  
CAM DRAWING  
*also*  
SQUARING SHEARS  
PRESS BRAKES



**JOSEPH HYMAN & SONS**

ESTABLISHED  
1898

PHILADELPHIA 34, PENNA.

TIOGA, LIVINGSTON & ALMOND STS.

Phone GARFIELD 3-8700

## IRON & STEEL SCRAP SECONDHAND RAILROAD CAR REPAIR PARTS RAILROAD EQUIPMENT

NEW & RELAYING RAILS

NEW AND USED STEEL PRODUCTS

# THE PURDY COMPANY

Railway Exchange Bldg.—St. Louis, Mo. —CH 1-0034  
Harbor Way —S. San Francisco, Calif. —PL 6-1222  
BOX 9026 —Long Beach, Calif. —TER 5-3194

MAIN OFFICE

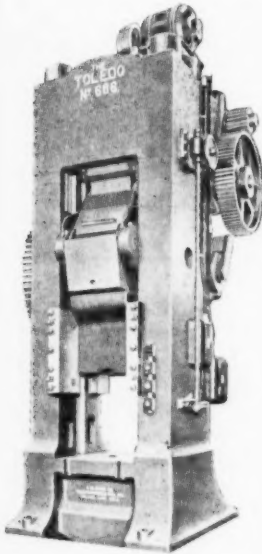
8754 S. DOBSON AVE.

CHICAGO 19, ILL.

BA 1-2100

# MOST DIVERSIFIED STOCK IN THE COUNTRY

"If It's Machinery, We Have It"



BLISS TOLEDO #666, Knuckle Joint, 1000 ton, Bed 37" x 31", Air Clutch, M.D. Still set up.

## POWER PRESSES

### HYDRAULIC PRESSES

BLISS DOUBLE ACTION cap. 375 & 150 Tons, Bed 85" x 65" Self-contained M.D.  
BLISS Hydrodynamic, 200 ton Cap.

### DOUBLE CRANK

BLISS 5 1/2-48, 115 Ton Cap. Bed 48-30  
BLISS TOLEDO No. 93 1/2 H. Bed 84"x36", Str. 10", Sht. 30", Air Clutch, Air Cushion  
BLISS TOLEDO No. 93 1/2 J. Bed 108"x48", Str. 16", Sht. 32", Air Clutch, M.D.  
BLISS No. 6-84, Bed 84"x36", Str. 12" Sht. 20", M.D.  
NIAGARA No. 69BX, 125 T. bed 42"x36", Str. 4"  
FERRACUTE 8G, 106, Bed 42"x36", RL, 100 Ton  
CLEVELAND 45-D-60, 60"x40", Bed 3 1/2" Stroke  
BLISS No. 6-96W, 400 ton cap., Bed 96"x60", Str. 14"  
BLISS No. 7-84, 200 ton cap., Bed 84"x36", Str. 12"  
CLEVELAND 150 ton Bed 96"x48", Str. 8"

### STRAIGHT SIDED SINGLE CRANK PRESSES

CLEVELAND #38E, 2700 ton cap. Bed 72" x 54" Air Clutch, M.D. Like New

BLISS Nos. 37 1/2, 52, 74 1/2, 75 1/2, 77 1/2, 78 1/2, 303, 304, 305, 307, 505V  
BLISS No. 311A, 550 ton Bed 48"x48", Str. 24"  
FERRACUTE E-3 & E-4 with Roll Feeds  
FERRACUTE DG-53 & DG-54 Geared  
FERRACUTE DGH-56-26" stroke Deep Draw Press  
NIAGARA No. 510 Geared with Slide Shear  
TOLEDO No. 59 1/2, Twin Flywheel Forging, 400 Ton  
TOLEDO No. 57A 32"x32" bed, 6" str., M.D. 175 Ton

BLISS No. 51-250, 250 tons cap. Bed 33" x 39", Str. 14". Equipped with Air Clutch, Air Cushion.

## KNUCKLE JOINT PRESSES

TOLEDO Nos. 660, 662, 666 Air Clutch  
BLISS Nos. 4, 22K, 23K, 24K  
FERRACUTE No. E51, 75 ton, EG 54, 400 ton  
WATERBURY 25, 50 and 350 ton  
ZEHR & HAHNEMANN Nos. 7, 8 1/2, 10 & 12 Percussion

BLISS-TOLEDO #666, 1000 ton cap. AIR CLUTCH, M.D.

## TOGGLE DRAW PRESSES

BLISS No. 14D, 450 Ton, Draw & Lift 18"  
BLISS Nos. 1 1/2, 1 1/2 B, 3 1/2 B, 3 1/2 C, 3 1/2, 5-40  
GARRISON 500 Ton 12" shaft, 48x64 bed, single crank  
FERRACUTE SD-703 60"x72" Bed  
CLEVELAND 12T & 14T Air Clutch

## INCLINABLE (O.B.I.)

BLISS Nos. 18, 19, 19C, 20, 20B, 21, 21 1/2, 22 & 28  
FERRACUTE C2, C3, C4, C5  
V & O Nos. 00, 01, 1, 2, 4, 101, 102, 103 & 104,  
Flywheel & Geared with Dial Roll Feeds  
NIAGARA, A1 1/2, A2, A3, A3 1/2, A4, A5 1/2, A6 1/2

WARCO 100 ton 30"x39", 8" stroke Air Clutch, M.D. 1948.

## POWER PRESSES

### HORNING & WIRING

ADRIANCE, CALLAHAN—Nos. 23, 24 & 25  
BLISS Nos. 2A, 4A & 5A Adj. Bed  
BLISS Nos. 16, 39, 40 & 41 Adj. Tables  
FERRACUTE Nos. CA-4 & CAG-4 M.D.  
FERRACUTE Nos. PA-4 & PA-5 End Wheel Type  
BLISS No. 43—10" Str. & Table M.D.

## EYELET & TRANSFER PRESSES

WATERBURY-FARREL, No. 66 and No. 67 Cam Type  
BLAKE & JOHNSON No. 106 Cam Type  
WATERBURY-FARREL 13 Stations, 1 1/2" Stroke  
BLISS No. 853 Double Act., 10" Plunger Stroke, 5 Station  
BLISS 5 Station, Tooling for Pie Plates 100 ton cap.  
CLEVELAND 55-D-72 6 Sta. Encl. gearing, like new  
BAIRD No. 4-37, 14 Stations M.D., Roll Feed

## GAP FRAME PRESSES

BLISS No. 27-84 Bed 100"x24", Str. 10", 200 Ton  
BLISS No. 104, 105A, 106A, Incl. Machine  
BLISS-CONS No. 175, Bed 86"x30", Str. 6"  
WELLS No. 6 and 10.

## ROLLING MILLS

UNITED Three-High Hot Bar & Rod Mill

LEWIS Two High 16"x35" sealed gear case drive and motor.

UNITED ENGINEERING 8"x14" & 8"x10"  
WATERBURY-FARREL 10"x10" 50 HP Motor  
BLAKE & JOHNSON 12"x10" Motor Screw Down  
BLISS 6"x9" anti-friction bearing—2  
NEWBOLD 3 High—20"x30"

LEWIS 28"x56" Face Rolling Mill, Motor Driven, Screwdown, Sealed Gear Reduction Drive

## WIRE WORKING

BAIRD, NELSON, MANVILLE Four Slides, Nos. 0, 1, 2, 3, 4, 5, 3-20, 4-32 M.D. Wire and Strip Formers (New and Used)  
U.S. Tool Nos. 22 & 23 Multi-Slides, Reverses  
BLISS & TOLEDO Automatic Ring Machines  
SLEEPER & HARTLEY Universal Spring Coilers Nos. 0, 1, 2, 3, 3 1/2, 4 & 5  
SLEEPER & HARTLEY No. 319 Casting Coilers  
WELLS SPRING MACHINERY, Coilers, Knotter & Crimper, Pig. Mach., Link Fab. Mach.  
LEWIS SHUSTER WELLS Auto. Wire Str. & Cutting Machines, Cap. 1/16" to 3/8"  
NIELSON & BAIRD Chain Machines  
NATIONAL & PERRINSON Nail Machines & BLISS

## WIRE DRAWING EQUIPMENT

VAUGHN No. 208 Eight Die Continuous Cone Tandem Wire Drawing Machine 75/100 H.P. D.C. Motor, String Up Machine, Wire Pointer Like New Condition.

STANDARD TORRINGTON, LANGELEIER ETNA Wire & Tube Swagers Nos. 1, 2, 3, 4, 5, 8  
ETNA Nos. 154, 158, 206, 308, 412 Swagers

Machinery for the Production of Wire Specialties, Wire Staples, Hair & Bob Pins, Paper Clips, Straight & Safety Pins, Nails, Wire Baskets & Wire Guards

## BOLT, SCREW, NUT & RIVET EQUIP.

WATERBURY No. 6 Solid Die Header, 3/4"x4"  
WATERBURY-FARREL No. 45 cap. 3/4"x8"  
WATERBURY No. 4 D.S.O.D. Reheader cap 3/4"x8"  
WATERBURY No. 3 Double Str. Open Die 1/2"x8"  
MANVILLE No. 312C—5/16 Cap. w/Ajax Hogue Wire Drawers D.S.O.D.  
WATERBURY-FARREL Double Stroke Solid Die No. 2, 1/4" Cap. No. 3 1/2" Half Inch Capacity  
WATERBURY-FARREL 5/16" Cap. and 1/2" Cap. Double Stroke Open Die Cold Headers  
WATERBURY-MANVILLE Double & Single Str. C.H., Cap. 1/16" to 3/4"  
ROD HEADERS 1/4" & 3/8" Capacity  
WATERBURY Nos. 1 & 2 Automatic Screw Slotters  
MANVILLE Auto. Wood Screw Machines  
WATERBURY-FARREL Nos. 0, 10, 20, 30 & 50 thread Rollers, Hand and Hopper Feed, M.D.  
NATIONAL 8/16", 3/4" 1/4" Auto B. Rhank Nut Tappers (Standard & Projection)

## METAL WORKING

### POWER SHEARS

PELS 9' x 3/4" Cap. M.D.  
NIAGARA 12"x3 1/2" Gauges, M.D.  
NIAGARA No. 66, 6"x3/16", M.D.  
NIAGARA No. 216B Circle Shear

HALLDEN 24" Strip Straightener & Automatic Cutoff M.D.

## POWER PRESS BRAKES

VERSON T58, 8 1/2"/16", 10" Bed M.D.  
CINCINNATI 6"x3/4", 8' long 200 Ton. M.D.  
CINN. No. 90-8, 8"x5/16", 10" Bed M.D.  
CHICAGO 253 & 354 M.D.

## SLITTERS

BLISS Nos. 225, 225A, 235 & 315 Gang  
WATERBURY Nos. 0, 1, 2 Gang  
YODER 12" wide, like new

## ROLL LEVELLERS

McKAY 54" Backed Up Roller Leveller 2 1/2" Diameter  
HILLES & JONES 2, 86" x 1/4" Cap.  
TORRINGTON 9 Roll 7"x28" M.D.  
W & E 54" Wide x 2 1/2" Face  
WEAN 28" Face x 6" Dia., 17 roll M.D., Top Roll Adj.

## ROLL FORMERS

RAFTER 12 Station 2 1/2" Dia. Spindle 28" wide Machine, New 1955  
RAFTER 7 Head Tube Former  
RAFTER 5 Head Tube Former  
PITTSBURGH 4 & 5 Head Tube Formers  
MAPLEWOOD Tooling for Curtain Rods  
YODER 5 Head with Flying Shear  
YODER M3, 42" wide, 10 Station  
RAFTER 10 Stand 2 1/2" Dia., Spindle, M.D.

Our Stock Is Always Changing and We Solicit Your Inquiries

# NATIONAL MACHINERY EXCHANGE

128 MOTT STREET NEW YORK 13, N.Y. Cable: NATLMACHEX Phone Canal 6-2470



January 3, 1957



ALSO IN STOCK  
STEEL  
SHEETS & PLATES  
STRUCTURALS  
and Aluminum Products

## New RAILS Relaying

### TRACKWORK of all KINDS

LIGHT RAILS—12# to 60#—20'0" & 30'0"  
HEAVY RAILS—60# to 100#—30'0" & 33'0"  
JOINT BARS, BOLTS, TIE PLATES, SPIKES &  
TOOLS, FROGS, SWITCHES, STANDARD &  
SPECIAL TRACKWORK.

SEND US YOUR INQUIRIES

### KASLE STEEL CORPORATION

BOX 536 ROOSEVELT PARK ANNEX, DETROIT 32, MICH.—PHONE TIFFANY 6-4200

### PLATE STRAIGHTENER

Capacity 144" x 1"  
9 Leveling Rolls, 14" dia.  
2 Pinch Rolls, 18" Dia.  
Roller Brgs.—Steel Frame  
Power Entry & Exit Tables  
Motors & Controls.

#### LANG MACHINERY COMPANY, INC.

20th St. & A.V.R.R.

Pittsburgh 22, Pa.

### FORGING MACHINE

*Sacrifice for Quick Sale*

Ajax 3" Forging Machine.  
Air Clutch and Air Brake  
—New in 1947.

#### COMMERCIAL EQUIPMENT & MACHINERY CO.

1330 N. 5th St. Phila., Pa.

Phone STEvenson 4-8911

### For First Quarter 1957 Delivery

ALL NEW PRIME PIPE SPECIFICATION A-106 GRADE  
B DOMESTIC MADE STEEL (WITH MILL PAPERS)

1500" 8" (8 3/4" ODx.906" Wall) Schedule 160  
2000" 8" (8 3/4" ODx.875" Wall) Dbl Ex Hvy  
1500" 12" (12 3/4" ODx.687" Wall) Schedule 80  
1500" 12" (12 3/4" ODx1.000" Wall) Schedule 140  
2500" 14" (14" ODx.750" Wall) Schedule 80

For Prices and Full Particulars  
Call Collect to:

#### M. J. SCHATZMANN

ST. LOUIS, MISSOURI

DAY: MOHAWK 4-0870

NITE: WYDOWN 1-5791

BSA 1/2" & 1 1/4" Automatics, 1954.  
Nos. 5G & C12 Natco Multi-Drills.  
Gleason 3" Str. Bevel Gear Generator.  
Fellows No. 4 Gear Shavers.

#### D. E. DONY MACHINERY CO.

4357 St. Paul Blvd. Rochester 17, N. Y.

6' x 1 1/4" Lown Initial Type Bending Roll, M.D.  
6' x 12 Ga. Wysong & Miles Initial Type Bending Roll, M.D.

#### FALK MACHINERY COMPANY

16 Ward St. Baker 5887 Rochester 5, N. Y.

1 1/4" National Upsetter High Duty, guided over-arm slide, air clutch  
Ajax & National Upsetters, suspended slide, 2 1/2", 3", 4"; similar upsetters not suspended slide, 3/4", 1", 1 1/2", 2", 3"

5" Acme Upsetting & Forging Machines suspended slide, cam side die slide

700-ton Ajax High Speed Forging Press

50,000# Standard Double Draw Bench

#3 Abramson Bar & Tube Straightener

Pels FV-75 Bar & Biller Shear, Cap. 7 1/2" rd 10" x 1/2" Plate Shear, Long & Allstatter 10" throat, M.D. Rebuilt

Also 10' x 3/4" L & A

Hilles & Jones and Buffalo Shears 1 1/2", 2", 2 1/2", 3", 3 1/4", 4" and 4 1/4"

1600 Chambersburg Model F Board Drop Hammers, Roller bearing; double V-ways, Built 1943

1500 lb. Niles Steam Forging Hammer  
Bradley Hammers, various sizes, including 500# Upright

Nazel Air Forging Hammers, #2-B, 5-N

Williams White Bulldozers, #22, #3, #4, #25, #6, #29 U-type

Landis Landmaco and other Landis Threading Machines from 3/4" to 4"

Single and Double End Punches

Angle Shear H & J. 6 x 6 x 1"

No. 3 Match & Merryweather Saw, with Saw Grinder

Wide assortment of heat treating furnaces, electric and oil

BOLT, NUT AND RIVET MACHINERY, COLD HEADERS, THREAD ROLLERS, THREADING MACHINES, TAPPERS, COLD BOLT TRIMMERS, SLOTTERS, HOT HEADERS AND TRIMMERS, COLD AND HOT PUNCH NUT MACHINES.

#### DONAHUE STEEL PRODUCTS CO.

1919 W. 74th St., Chicago 36, Ill.

Used Shear, 12' of 3/16", in good condition with extra set of knives, subject to prior sale. Unit taken in trade.

#### STANLEY BERG MACHINERY CO.

1231 Banksville Road  
Pittsburgh 16, Pa.

## Put The Clearing House To Work

Fill out the coupon and send it in. Full details will be sent without obligation.

### THE IRON AGE

Chestnut & 56th Sts., Philadelphia 39, Pa.

Please send me rates and general information about the Clearing House Section without obligation on my part.

Firm: .....

City: ..... Zone: .....

State: .....

Name: .....

Title: .....

— Let The Iron Age  
Clearing House do a  
selling job for you.

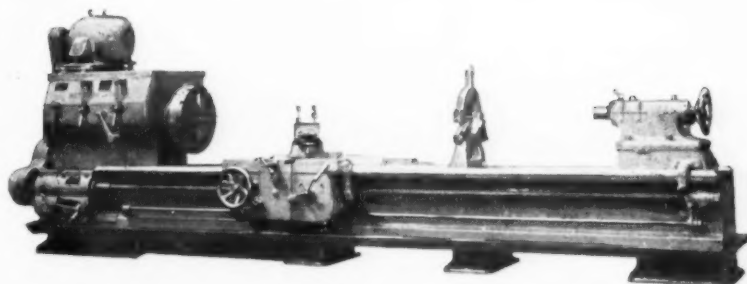


# EMERMAN OFFERS FROM STOCK

## FOR SALE . . . FOR RENT

### 32" x 14' PITTSBURGH SOMMERFELD LATHE.

Used only 4 years. Serial No. 1719. New 1942. 36" Swing over bed—24" Morse Taper No. 6. 12 between centers 14 1/2"—Range 4 to 165 RPM. Range of spindle speeds—Range 4 to 165 RPM. Range of feeds—Long—.013" to .383". Cross—.004" to .131". Equipped with: 24" 4-Jaw Chuck, 36" Face plate Taper Attachment, Rapid Traverse, Complete Electrics



### RADIAL DRILLS

4'-11" Cincinnati Bickford, Super Service, Serial 3E228, 1942  
5'-15" Carlton, Motor on Arm, Box Table, Late Type  
6'-17" Fosdick, Complete electrics, Ser. 9214

### MULTIPLE SPINDLE PRODUCTION DRILLS

Mod. Q60H, Fox, 20 Spindle, Adj. Arms, No. 5 Taper, Elects.  
No. 82A Natco, Multiple, T.B., Comp. Elects., Ser. B2A531, 1942  
No. 4AL Natco, Multiple, T.B., Elects., Ser. 4A1-243, 1942  
No. 42 Bodine Auto. Index, 30" Table, Ser. 414207

### HEAVY DUTY DRILLS

No. H4 Barnes Hydram, Flanged Quill, T.B., Ser. 2296, 1942  
No. 36HO Baker, Flanged Quill, T.B., Comp. Elects., Ser. 13745  
No. 121 Baker, T.B. Comp. Elects., Ser. 11398  
No. 924 Barnes, Oversize Vert. Boring & Drilling, Ser. 924-127  
No. 420 Barnes Horizontal, 98" Fd., Comp. Elects., Ser. 614  
24" Footeburt, Hyd. Vert., No. 6 M.T., Ser. 146842, 1942  
Baker Horizontal, T.B., Complete Electrics, Ser. 13196, 1942

### AUTOMATIC PRODUCTION LATHES

No. 3D Gisholt, Comp. Elects., Ser. 545-23, 1945  
No. 4FU Foster Fastermatic, Platen Type, Ser. 4FU-101, 1942  
No. 12 Gisholt, T. B., F & R Slides, Ser. 3012-4, 1941  
No. 12 Sundstrand, Extended Bed, Center Drive, 108" CC Ser. 82124  
8" x 108" L-Swing, F & R Slides, Tailstock, Ser. LB-4803, 1947  
16" x 21" Fay, Complete Electrics, Serial 81517  
20" x 25" Fay, Complete Electrics, Serial 82668  
24" x 69" Fay, Complete Electrics, Ser. 7469, 1943

### ENGINE LATHES

16" x 36" LeBlond, Complete Electrics, Ser. ND-8489, 1943  
18" x 30" LeBlond, Complete Electrics, Ser. NF-4932, 1942  
18" x 54" Hendy, T. A., Chk., Chuck, Ser. 36746, 1945  
20" x 20" LeBlond, Raised to 31" Profile Att., Ser. NF-4585, 1943  
22" x 72" Lehman, Super Service, Chucks, Ser. 5213, (2)  
32" x 14" Pittsburgh Sommerfeld, Hevi Duty, Ser. 1718, 1942  
32" x 25" Pittsburgh Sommerfeld, Hevi Duty, Ser. 1720, 1942  
32" x 13 1/2" Niles H. D., Comp. Elects., Ser. 22328, 1942  
36" x 108" Monarch Mod. NN, Dupl. Att., Ser. 14408A, 1943  
36" x 14" Wickes Hevi Duty, Comp. Elects., Ser. 6785-1, 1942  
40" x 108" LeBlond, H.D., T.A., Chks., Elects., Ser. NO-192

### TURRET LATHES

No. 3 Gisholt, B.F., 4-Way Tool Post, Tooling, Ser. 2839-38, 1943  
No. 4 Warner & Swasey, Air Chuck, Air Cyl., Elects., Ser. 907332W  
No. 5 Warner & Swasey, Preselector, Chuck, Ser. 550830  
No. 5 Gisholt, Preselector, Chuck, Ser. 876-45, 1943  
No. 2A Warner & Swasey, 24" Bed Ext., Chuck, Ser. 620134  
No. 3A Warner & Swasey, B.F., Chuck, Elects., Ser. 524268  
No. 3L Gisholt, Chucker, Tooling, T.B., Elects., Ser. 691-32, 1942  
No. 4A Warner & Swasey, Univ., C.S.I. Turr., T.A.T.T., Ser. 597780, 1942  
No. 21B Bardons & Oliver, Saddle Type, Univ. Ser. 16606, 1946

### AUTOMATIC TURRET LATHES

No. 4D Potter & Johnston, Air Chk. & Cyl., Tlg., Ser. 2718, 1945  
No. 6D Potter & Johnston, T.B., Air Chuck, Air Cyl., Ser. 71322, 1940

### PLAIN HORIZONTAL MILLS

No. 3KM, Plain Mill, Comp. Elects., Ser. 2822-6, 1940  
No. 3H, Kearney & Trecker, Comp. Elects., Ser. 323150  
No. 4K Kearney & Trecker, No. 50 Matl. Std. Taper, Ser. 2575-2  
No. 26 Van Norman, Swivel Head, Comp. Elects., Ser. 26-5080

### PLANNER TYPE MILLS

36" x 12" Ingersoll, 60" Table Fd., No. 60 Taper, Ser. 15884

### PRODUCTION SIMPLEX MILLS

No. 1403 Kearney & Trecker, 36" Feed., T.B., Rap. Trav., Elects.  
No. 1848 Kearney & Trecker, Comp. Electrics, Ser. 3-4409, 1945  
No. 1854 Kearney & Trecker, No. 50 Taper, Ser. 4-3187, 1942

### PRODUCTION DUPLEX MILL

No. 36-90 Cincinnati Hydro. Tracer Control, Ser. 4838D1LI

### ROTARY MILLS

72" Ingersoll Vert. 72" Dia. Table, No. 50 Taper, Rap. Trav. 1943  
No. C28 Newton, 2 Spdl. Vert., 72" Dia. Table, Ser. 5902, 1945  
Ingersoll Drum Type Rotary, 5 Spdl., Serial 14684, 1937

### THREAD MILLS

6" x 36" Lees Bradner Mod. LT Univ., Serial LT-345, 1942  
6" x 60" Pratt & Whitney, Comp. Elects., Ser. 460

### UNIVERSAL MILLS

No. 3H Kearney & Trecker, 3 Headstock, Tailstock and Vise, Ser. 93-4220

### VERTICAL MILLS

No. 3V Van Norman, No. 50 Natl. Std. Taper, Ser. 3V5067, 1942  
No. 4 Reed Prentice, Speeds 20—1170 RPM, 1943

### GEAR GENERATORS

No. 3 Gleason, Spiral Bevel, Misc. Tooling, Ser. 16986, 1942

### GEAR CHAMFERING MACHINE

No. 50 Cross, Complete electrics, Serial 920, 1942

### GEAR HOBBERS

No. 7A Lees Bradner, 8 Spdl. 8 x 20, Ser. 7A-360-7A367, 1947  
No. 8H Gould & Eberhardt, Outboard Support, Ser. 917A3, (3)  
No. 16H Gould & Eberhardt, Outboard Support, Ser. 333A7, (3)

### GEAR ROUGHERS

No. 12 Gleason Straight Bevel, T.B., Elects., Ser. 17521, (4)  
No. 7 Gleason, Revers. Misc. Tlg., Comp. Elects., Ser. 19792

### GEAR SHAPERS

No. 61 Fellows, Comp. Elects., T.B. Ser. 20181  
No. 7A Fellows, T.B. Comp. Elects., Ser. 20313  
No. 645A3 Fellows, T.B., Comp. Elects., Ser. 20694 (2)  
No. 7125A Fellows, T.B., Comp. Elects., Ser. 26450, 1949  
No. 712 Fellows, T.B., Comp. Elects., Ser. 25312, 1945  
No. 725A Fellows, Tooling, T.B., Elects., Ser. 22589, 1943

### INTERNAL GRINDERS

No. 16A28 Bryant, Int. Spdl. and Facing Spdl. Elects. Ser. P7168, 1944  
No. 16-38 Bryant, Int. Spdl. and Facing Spdl. Elects. Ser. P6887, 1944  
No. 5 Bryant, Complete electrics, Ser. 6948, 1943 (5)  
No. 24L-36 Bryant, Int. Spdl., Comp. Elects., Ser. M6891, 1944  
No. 50 Heald, Pl. Cyl., Planetary Type, Elects., Ser. 16844, 1942  
No. 72A Heald, Extended Bed, Comp. Elects., Ser. 9993  
No. 72A Heald, Cross Slide Head, Comp. Elects., Ser. 20452  
No. 78 Heald, Centerless, Hyd. Fd., Comp. Elects., Ser. 22518, 1944 (12)  
No. 112 Bryant, Hyd. Fd., Well Tooled, Elects., Ser. R-4560, 1942

### SURFACE GRINDERS

No. 824 Arter Rotary, 26" Dia. Chuck, 30" Capacity, Ser. 2680, 1943  
No. 5 Brown & Sharpe, Hyd., Complete Electrics, Ser. 911  
No. 25A Heald Rotary, Magnetic Chuck, Comp. Elects., Ser. 15322  
10" x 60" Norton Hyd., Mag. Chuck, Elects., New, 1944

### PLAIN CYLINDRICAL GRINDERS

6" x 18" Norton, Hydraulic Feed, Comp. Elects., Ser. 20010  
6" x 30" Cincinnati, Hyd. Fd., Plunge Cut, Elects., Ser. 5PIC1J-8  
6" x 30" Landis, Hyd., T.B., Hyd. Feed, Elects., Ser. 22300, 1942  
10" x 18" Norton, Hyd. Fd., Comp. Elects., Ser. C-19090, 1943  
10" x 18" Cincinnati, Filmatic Bearing, Plunge Cut, Elects., 1942  
10" x 24" Cincinnati Filmatic Bearing, Plunge Cut, Elects., 1942  
10" x 36" Cincinnati, Plunge Cut, Att. Elects., Ser. 3P2D1K-35, 1943  
10" x 36" Norton, Hyd. Fd., T.B., Elects., Ser. C-17771, 1943  
10" x 30" Norton, Angle Head, Comp. Elects., Ser. C-18818

### FACE GRINDER

No. 1109 Bryant, Complete Electrics, Ser. J-10936, (2 Brand New)

### UNIVERSAL GRINDERS

12" x 36" Cincinnati, Int. Spdl., Comp. Elects., Ser. 243D1M-125, 1943  
14" x 36" Landis, Complete Electrics, Serial No. 27194, 1944

## EMERMAN MACHINERY CORP.

875 W. 120th St., Chicago 43, Ill.

January 3, 1957

PULLMAN 5-7626

393



## FOR SURPLUS STEEL PLANT EQUIPMENT

## AVAILABLE EQUIPMENT

1—32" & 20" x 110" 3-Hi Plate Mill, complete with Electric Screwdown, Pinion Stand, Front and Back Tables, Run-out Table, 9 Roll Plate Leveller & Furnace.

1—28" Dia. x 38" 2-Hi Reversing Hot Strip Mill, complete with Reels & Holding Furnaces, 2500 H.P. DC Drive, Motor Generator Set, Controls, Hot Run Table, Hot Reel, etc.—Less than 10 Years Old

1—36" x 1/4" Slitting Line, complete with Coil Box, Pinch Rolls, Crop Shear, Slitter & Recoiler—All Electrics Included.

1—36" x 1/4" Cut to Length Line, complete with Coil Box, Hump Table, Pinch Rolls, Down Cut Shear, Back Table & Cage—All Electrics Included.

1—36" x 1/4" Coil Build-up Line, complete with Coil Box, Leveller, Down Cut Shear, Butt Welder, Flux Reclaimer, Recoiler, and all Electrics—New.

1—144" x 3/16" Stamco Power Squaring Shear, complete with Holddown.

1—12" 3-Hi Bar Mill, 3-Stand, Top & Bottom Screw, complete with Pinion Stand and 750 H.P. DC Motor 200/400 RPM & Controls.

1—2000 H.P. G.E. Slip Ring Motor, 237 RPM, 3/60/2200 V., complete with all Controls.

Write for the Curry List of available steel plant equipment

**Curry & CO. INC.**

STEEL PLANT EQUIPMENT

941 OLIVER BUILDING • PITTSBURGH 22, PENNA.  
Phone ATLantic 1-1370

Cable Address: CURMILL-PITTSBURGH

## Eastern Rebuilt Machine Tools

### THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

#### INTERNAL GRINDERS

No. 14—38" Bryant, m.d., latest  
No. 16A—16" Bryant Hole & Face, m.d.  
No. 16A—28" Bryant, m.d.  
No. 24—36" Bryant Hole & Face Type, m.d., late  
No. 24P—26" Bryant, m.d.  
No. 24—21" Bryant, m.d.  
No. 24-LW—36" Bryant, m.d., late  
No. 24-LW—36" Bryant, m.d., late  
No. 44 Heald Facing Type Borematic, m.d.  
No. 47A Heald Borematic, m.d.  
No. 649—16" Van Norman Automatic Oscillating Radius, m.d., latest  
No. 70 Heald, motorized 3 motors  
No. 70A Heald, m.d., latest  
No. 72A Heald Sismatic, "Duplex," m.d.  
No. 72A Heald Gagematic, m.d.  
No. 72A3 Heald Sismatic, m.d.  
No. 72A3 Heald Plain, m.d.

No. 72A5 Heald Sismatic, m.d.  
No. 72A5 Heald Plain, m.d.  
No. 73 Heald Airplane, m.d., latest, new  
No. 74 Heald, m.d.  
No. 74 Heald, Plain Long Base, m.d., 1941  
No. 75A, Heald, m.d., latest  
No. 78 Heald Centerless Cylinder Grinder, m.d.  
No. 81 Heald Gagematic, Sismatic, m.d.  
No. 81 Heald Plain & Sismatic, m.d.

#### PUNCHES & SHEARS

No. 7 Thomas Vertical, latest  
No. 6 1/2 Hilles & Jones Punch & Shear, single end, type "G"  
Cleveland Type G Vertical Shear, 72" throat, m.d.

#### SNAG GRINDERS

Type No. 50—7 1/2 H.P. Standard Elec. Tool Co. Double End, m.d.  
25 H.P. U.S. Elec. Co. Heavy Duty Double End, m.d.

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times.

## THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio  
MEIrose 1241 CABLE ADDRESS—EMCO

## FOR SALE

2 complete Stamco 32" Slitting Lines, Equipped with pay-off and take-up reels for coils up to 6,000 lbs. Gravity feed and delivery tables. Automatic scrap cutters.

Also 1 K & R 48 inch Roller Leveller, eleven 4 1/2 inch rolls. All in excellent condition.

**Robinson Steel Warehouse Co.**  
Box 298 Wheaton, Illinois

#### MACHINERY FOR SALE

1—Cincinnati-Gilbert Boring Mill, Floor Type, Horizontal Boring, Drilling Machine, Serial #783, Milling attachment with mounting bracket \$30,000.00  
1—Landis Boring Mill, Floor Type, Horizontal Boring, Drilling Machine, Model 40, Serial #584 \$4,000.00  
**AIRTHERM MANUFACTURING COMPANY**  
700 South Spring Avenue St. Louis 10, Missouri

## AMERICA'S LARGEST FOUNDRY MACHINERY DEALERS

- New Machine Performance
- At Least 50% Savings
- All Machines Guaranteed

AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

**Universal Machinery & Equipment Co.**

1630 N. NINTH ST., READING, PA.  
Phone: Reading 3-5103

## RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT A. C. MOTORS 3 phase—60 cycle

SLIP RING			
Qr.	H.P.	Make Type	Volts Speed
3	1750	G.E. M-579B8	4800 1800
1	1500	G.E. MT	6600 257
1	1100	F.M. OVZK, B.B.	4800 1800
1	1000	A.C. MIII	2300 240
1	800	G.E. MT	2300 283
1	750	G.E. MT-573	2200 1180
1	700	A.C.	2200 560
1	580	Whao. CW	550 350
1	400	Whao. CW-960A	440 1170
1	400	Whao. CW	440 514
1	400	Whao. CW-1213	2200 485
1	350	G.E. IM-17A	440/2200 750
1	250	G.E. MT-424Y	4000 257
1	250	G.E. MT-559S	2200 1800
1	250	Al. Ch.	550 400
1	200	Cr. Wh. 30QB	440 585
1	200	G.E. 1M	440 435
1	200	G.E. 1M	2200 580
1	150 (unused)	Whao. "W"	3300 435
2	125	A.C.	440 885
1	125	Al. Ch.	440 720
1	100	G.E. IM-10	2200 435
1	100	G.E. 1M	440 600
4	100	A.C. ANY	440 695
SQUIRREL CAGE			
1	800	G.E. KT-573	2200 1180
2	650	G.E. PT-559BY	440 3570
2	450	Whao. OS-1430	2300/4150 854
1	400	G.E. 1K	2200 500
1	200	G.E. 1K-17	440 580
2	200	G.E. KT-557	440 1800
1	150/75	G.E. 1E	440/900/450
1	150	Whao. OS450B	440 880
1	150	Whao. CW	440 580
2	125	Al. Ch. ARW	2200 1750
SYNCHRONOUS			
Qr.	H.P.	Make Type	Volts RPM
1	7000	G.E. ATI	2200/3600 600
1	4350	C.W. 3501SL4000/6900/13500	514
1	2850	Whao. .8 p.f.	2300/4600 514
1	2800	Whao. .8 p.f.	2300 720
2	2000	Whao.	2300 120
2	1750	G.E. ATI	2300 8600
1	735	G.E. ATI	2200/12000 600
1	500	G.E. TS-7567	2200 1200
1	450	Whao.	2200 120.5
1	825	G.E. ATI	440 1800
1	225	G.E. ATI	440 1800

## BELYEA COMPANY, INC.

47 Howell Street, Jersey City 6, N. J.

## CRANES

BOUGHT & SOLD  
ENGINEERED TO  
YOUR REQUIREMENTS

**Ornitz Equipment Corp.**

Industrial Engineering Service  
230 3rd Ave. Brooklyn 17, N. Y.  
TRiangle 5-2553

# LIQUIDATION

***Of A Complete Plant Located 10 Miles From  
Philadelphia in Heart of Delaware Valley***

**ALL ITEMS ON ORIGINAL FOUNDATIONS**

## PRESSES

Ferracute 400 ton Cap. Arch Type Coining Presses (4)  
Walsh #38 O. B. I. Late  
Bliss #215 O. B. I. Late  
Bliss #20 O. B. I. Late  
Bliss #19 1/2 O. B. I. Late  
V & O; O. B. I. Blanking and Drawing  
Z & H #5 Percussion Presses (2) Late  
Z & H #7 Percussion Presses (2) Late  
App. 50 other presses of various sizes and types

## HYDRAULIC PRESSES

Denison; All Steel; C Frame Type; 50 ton; Self Contained; Late  
Waterbury; 4 Col. Type; 500 ton Cap. Self Contained; Coining Press

## MACHINE TOOLS

Lathes; Monarch; Model EE; 12 1/2" Swing x 20" C-C; 2500 RPM; Late; (5)  
Grinders; DoAll; Hyd. Surface Grinder; Model D-8; Late  
Milling Machines; Van Norman; #12; Duplex Millers (2) 70-1465 Speeds  
App. 300 other machine tools too numerous to list.

## WELDERS

National Spot Welder; Late; With All Controls; Type 75; Cap. 50 KVA

## HEAT TREATING

I—G. E. Ammonia Dissociator; 20 K.W. Cap. 1000 C.F. per Hr  
I—Ajax Ammonia Dissociator; 4 KW. Type 305  
I—Surface Combustion Gas Oven; Style #1; 54"x76"; #5057  
I—Despatch Elec. Oven; 15 K.W. 850 F. Style CF-24; #17747  
I—Sergeant & Wilbur Con. Oven; Belt 8" W; 30 K.W. 1800 F; Model O-8  
App. 100 other items of heat treating and test equipment too numerous to list

## PLATING & TUMBLING

Complete Plating Equipment, including Tanks, Gens, Anodes, etc.  
9—30" Tumblematic Tumbling Barrels in units of 3

## MISCELLANEOUS

I—Paasche; Automatic; Airpainting; Aircooling; Airfinishing; Aircoating; Infra Red Drying Unit; Type 424; Very Late  
I—Detrex Soniclean (ultra sonic cleaner) #542; Very Late  
I—Complete Dust Collecting System to Serve Grinding Dept.  
Several hundred items of Misc. equipment too numerous to list

***For Further Information Call, Wire, or Write***

# C. G. WYATT MACHINERY CO., INC.

24th and Hayes Ave., Camden 5, New Jersey

EMerson 5-0277

# ROLLING MILLS—STEEL WORKS EQUIPMENT

- 1—28" REVERSING BREAKDOWN MILL.
- 1—25" & 42" x 60" HOT STRIP MILL, 4-high.
- 1—28" PINION STAND, 2-high, modern design.
- 1—20" x 20" 2-HIGH COLD MILL, 2 stands, drive.
- 1—16" x 24" COLD MILL, 1 stand.
- 1—8" x 10" COLD MILL, 2-high; roller bearings; coil box, recoiler, D.C. variable speed drive.
- 1—5" x 4" COLD MILL, 2-high; roller bearings; coil box; coiler; D.C. drive.
- 1—18" BAR MILL, 3-high.
- 1—16" BAR MILL, 3-high, single stand, with motor and gear reducer.
- 1—12" BAR MILL, 3-high, 7 stands, with motor and gear reducer.
- 1—10" ROD MILL.
- 3—MECHANICAL HOT BEDS for bars, 150 ft. and 120 ft.
- 1—ROLL FORMING MACHINE, Kane & Roach, for .072" x 5 1/2" wide stock.
- 1—COIL-UP-AND-DOWN ENDER for 54" dia. x 44" wide coils.
- 1—34" x 192" ROLL GRINDER with motors and controls.
- 1—44" ROLL LATHE, enclosed headstock, tailstock, piano rest, 20 HP, 500/1500 RPM, 230 volts D.C. motor and controls.
- 2—ROLLER LEVELERS, McKay, rolls 80" face x 5 1/4" dia., with gear box and universal spindles.
- 1—STRETCHER LEVELER for sheets, 500,000 lb. capacity.
- 2—KANE & ROACH BAR AND ANGLE STRAIGHTENERS, sizes #4, and #5.
- 1—KANE & ROACH 2-WAY FLAT AND SHAPE STRAIGHTENER, capacity 1/2" square or 1 1/2" x 3/32" flat.
- 1—#1 MEDART STRAIGHTENER, capacity 1/2" to 2 1/2" bars, tubes.
- 3—PICKLING MACHINES for sheets, Mesta.
- 1—SCRUBBER AND DRYER for sheets 66" wide.
- 2—PACK FURNACES for hot sheet mills, 62" x 60", double chamber.
- 1—500 LB. SIZE "U" Pittsburgh Lectromelt Furnace, with 300 KVA transformer.
- 2—UNITED HOT SAWS, 50", sliding frame.
- 1—BLOOM SHEAR, capacity 6" x 6" hot.
- 1—TUBE CUT-OFF MACHINE, Aetna-Standard double end, 3" to 8 1/2" O.D.
- 1—UNITED #4 BAR SHEAR, vertical open side.
- 1—CRACKER SHEAR, AETNA-STANDARD, 2 1/2" bars.
- 3—WILLIAMS & WHITE bar shears.
- 1—HALLDEN AUTOMATIC STRAIGHTENING AND CUTTING MACHINE, max. speed 120 ft. per min., size range 5/32" to 1 1/32" rounds.
- 1—ROTARY SIDE TRIMMING SHEAR, capacity 112" x 3/4" plate.
- 1—192" x 10 GAUGE NIAGARA SQUARING SHEAR, little used.
- 1—156" x 3/4" MESTA SQUARING SHEAR.
- 1—156" x 1/4" SHEET SQUARING SHEAR.
- 1—120" x 10 GAUGE WYSONG & MILES SQUARING SHEAR.
- 1—SLITTING SHEAR FOR SHEETS, Mesta, 92".
- 1—FLYING SHEAR, capacity 1/8" thick x 36" wide in lengths from 2 1/2 ft. to 12 ft.
- 1—156" BRIDGEPORT SHEAR KNIFE GRINDER.
- 6—SWING GRINDERS for wheels 24" dia. x 3" face.
- 1—OPEN HEARTH CHARGING MACHINE, capacity 5 tons, new 1951.
- 1—ALLIANCE LADLE CRANE, 4 girders, 80 ton main hoist, 25 ton auxiliary, 55'5" span, 42' lift.
- 1—DRAWBENCH, Mesta, oil-hydraulic, for 3 strands of bars 20' long.
- 1—MEDART 6RGF BAR TURNING MACHINE, capacity 1 1/4" to 6" round.
- 1—TUBE TESTING MACHINE, Southwark, hydraulic, 1000 to 3000 lbs. pressure.
- 1—64" GALVANIZING LINE for sheets, with 2 roller levelers.
- 1—AIR COMPRESSOR, Worthington, 13" & 8" x 10", 100 lbs. pressure, 75 HP A.C. motor.
- 1—TOLEDO DIAL SCALE, 12500 lb. capacity, 92" x 71" steel platform.
- 3—LIFT TRUCKS, 5-ton Elwell-Parker.
- 1—3500 HP GEAR DRIVE, 514 to 80 RPM, 4.45 to 1 ratio.
- 1—2000 HP GEAR DRIVE, 200/580 RPM input, 4.44 to 1 ratio.
- 1—2000 HP GEAR DRIVE, 125/360 RPM input, 2 to 1 ratio.
- 1—1600 HP GEAR DRIVE, 514 to 87 RPM, 5.9 to 1 ratio.
- 1—3500 HP MOTOR, 11000 volts, 3 phase, 60 cycle, 514 RPM.
- 1—1200 HP MOTOR, 2200 volts, 3 phase, 60 cycle, 353 RPM.
- 1—COKE OVEN PUSHER, used very little, excellent.

**FRANK B. FOSTER, INC.**

2220 Oliver Building, Pittsburgh 22, Pa.

Cable: "Foster, Pittsburgh" Telephone ATlantic 1-2780

## FOR SALE:

Three (3) LeTourneau shuttle cars (14 ton capacity) equipped with the following: 8-DAS supercharged, 4 cycle, eight cylinder, 1800 RPM governed speed, 240 brake H.P. diesel engines and four (4) LeTourneau HF 3199, 3600-7200 RPM, 2 speed, 3 phase, 120 cycle AC drive motors.

Machines purchased in 1953 and used until late 1954. Condition Poor. Spare parts on hand in amount of \$9,649.37 also 13 tires valued at \$7,475.09.

Selling Price—Cars—\$2,850.00 each  
Parts— 3,850.00 lot  
Tires— 4,485.00 lot

Purchasing Department  
**WHITE PINE COPPER COMPANY**  
White Pine, Michigan

## 20,000 Used Crossties

Excellent creosoted 6 x 8 x 8 1/2", "5" ironed, grade 3, white and red oak

## 25,000 Tie Plates

RELAYING QUALITY

First class 7 1/2" x 10 1/2", single shoulder, punched to fit rail bases of 4 1/2", 4 3/4", 5 3/16", 5 3/8", 5 1/2".

All available for prompt shipment

**Morrison Railway Supply Corp.**  
Rand Bldg. Buffalo, N. Y.  
Phone MOhawk 5820

## New RAILS Relaying

We carry frogs, switches, spikes and bolts in stock and most all sections of rails and track accessories.

**M. K. FRANK**

480 Lexington Ave., New York, N. Y.  
Park Building, Pittsburgh, Pa.  
105 Lake St., Reno, Nevada

Used 225 Ton Press Brake in excellent condition, for immediate delivery, subject to prior sale. Unit taken in trade.

**STANLEY BERG MACHINERY CO.**

1231 Banksville Road  
Pittsburgh 16, Pa.

## STEEL GRADING FOR SALE

LARGE LOT OF USED IRVIN SUBWAY GRADING  
BRIDGE TYPE 2 1/2" x 3 1/16" BARS

**BUILDERS IRON WORKS, Somerville, Mass.**  
TELE. MONUMENT 6-2000

**Railroad Freight Cars—  
Gondola, Box and Flat  
Cars. Tank Car Tanks—  
8000 gallon. Steam Loco-  
motive Crane. Rails.**

**Consolidated Ry. Equipment Co.**  
6702 So. Cicero Ave., Chicago 38, Ill.



**Keep 'em rolling  
... not rusting  
FOR SALE**

New—Used—Reconditioned railroad  
freight cars • car parts • loco-  
motives • tank cars • steel storage  
tanks.

**MARSHALL RAILWAY EQUIPMENT  
Corporation**  
328 Connell Building, Scranton 3, Pennsylvania  
Diamond 3-1117 Cable MARAILQUIP

## FOR SALE

26 ton Ohio Diesel Locomotive Crane. New 1947. Caterpillar D-13000 Engine. Excellent Condition

35 ton Ind. Brownhoist Diesel Locomotive Crane. New 1943. Caterpillar D-13000 Engine. 15 KW Magnet Generator. Excellent.

50 ton Whitcomb Diesel Electric Locomotive 300 HP Cummins Engines. New 1943. Reconditioned.

65 ton Atlas Diesel Electric Locomotive 400 HP Cummins Engine. New 1942. Reconditioned.

115 ton Alco Diesel Electric Locomotive 1000 HP. New 1941.

**Mississippi Valley Equipment Co.**  
501 Locust St. St. Louis 1, Mo.

## FOR SALE

STEEL NAIL BURRS, Cleaned, dry and free of sawdust, steady accumulation approx. 10 ton monthly. Samples sent on request.

**Phila. Nail & Wire Co., Inc.**  
S.E. Cor. 61st & Vine Sts., Phila., Pa.



## SELECT MACHINE TOOLS

## GRINDING MACHINES

No. 5 Abrasive 12" x 60" surface grinder.  
72" Hanchett 3-sp. rotary surface, new 1946.  
14" x 36" Pratt & Whitney hyd. vert. surface, 1942.  
No. 74 Head hyd. sl. internal, X-sliding H. S., 1941.  
10" x 36" Landis type C hyd. pl. cylindrical, 1942.  
8" x 30" Cincinnati EA Filmeto pl. cylindrical, 1942.

## HAMMERS

No. 30 Chambersburg pneumatic, serial No. 2287.  
No. 6-1 Nazel, pneumatic, late.  
No. 6B Nazel, self-contained.

## LATHES

No. 3 Gisholt Univ. Turret Lathes (2), 1942.  
No. 5 Gisholt ram type Univ. Turret Lathes, 1940.  
14" x 6" Handay Toolroom, 1940.  
13" x 30" Lippe Carbo-Matic, 1942.  
36" and 42" Bullard New Era vertical turret lathes.  
126" x 96" CC Niles Bement Pond engine lathes, 60 HP, M.D.

## MILLING MACHINES

No. 2 Brown & Sharpe vertical mill, new 1945.  
No. 4 Cincinnati high power plain horizontal mill, serial E 506 J.  
No. 3-48 Cincinnati hydromatic duplex mill, serial 3B51D1K-5.  
No. 2-24 Cincinnati automatic simplex mill, serial No. 1B3PIT-1.

## PRESSES

80 ton No. 92½ C Toledo D.C. Str. Bldg.  
200 ton No. 7-72 Bilco S.S. D.C. Press, Air Clutch.  
200 ton No. 195½-72 Toledo D.C. Toggle drawing.  
360 ton Elmes self-cont. 4-post Hydraulic Press, 1944.  
500 ton No. 1039 Hamilton D.C. adj. bed, 90"x102".  
2000 ton No. 6 National Maxipress Forging Press.

## SHAPERS &amp; SLOTTERS

24" Gould & Eberhardt Universal.  
32" G & E Invinible, F.M.D.  
98" Rockford hyd. vertical slotter, new 1944.

## UPSETTERS

1½" National Upsetter, guided ram, hard ways.  
3½" Ajax suspended slides, steel frame.  
4" National high duty, susp. & guided rams.  
7½" National Upsetter, air clutch, new 1944.

1000 Tools in Stock  
Free Illustrated Catalog

## MILES MACHINERY CO.

PHONE SAGINAW 2-3105

2041 E. GENESEE AVE. SAGINAW, MICH.

36" x 36" x 8' Liberty Planer, motor drive 3 heads.  
30" x 30" x 8' Flather planer, belt drive 2 heads.  
#3 S Cincinnati Universal Miller, grd. hd. table 48" x 12".  
4 spindle Allen K H 2 sensi drill 4 motors 12"-15" overhang.  
3½"-9" col. Cin. Bick. radial drill, gear box drive.

Clarence J. O'Brien

1032 Commercial Trust Bldg.  
Philadelphia 2, Pa.Overhead Cranes & Hoists  
New and Used

250-ton Shaw, 65' span, 230 VDC, 2—125-ton trolleys  
100-ton Shaw, 65' span, 2—50-ton trolleys, 230 VDC  
125-ton Alliance Ladie, 60' span, 25-ton aux., 230 VDC  
120-ton Morgan, 65' span, 2—60-ton trolleys, 230 VDC  
50-ton Northern, 10-ton aux., 55'½" span, 440/3AC  
2—30-ton Weiman Engr. 5-ton aux., 60' span, 230 VDC  
15-ton Northern, 77' span, 220/3/60 cy AC  
7½-ton Shaw, 65'½" span, 220/3/60  
2—7½-ton Shaw, 47' span, 230 VDC  
1—10-ton Shaw, 36' span, 230 VDC with 100-ft. out-side runway  
10-ton Modern 37'-0" span, 220/3/60  
1—15-ton P & H, 51'½" span, 230 VDC  
1—15-ton Morgan, 50'½" span, 3-motor, 230 VDC  
1—5-ton Toledo, 60' span, 230 VDC  
100 other cranes, various spans and current.

JAMES P. ARMEL, Crane Specialist  
710 House Bldg. Pittsburgh 22, Pa.  
Tele: GR 1-4449

## MACHINES FOR YOUR YARD

Quickway truck crane; 29" magnet  
Unit 10-20A magnet crane  
Used generators for magnet crane  
Int. TD-14 with bulldozer  
Harris 2½ yd. Power Horse  
24"x48" magnetic pulley

TRACTOR & EQUIPMENT CO.  
10006 Southwest Highway, Oak Lawn, Ill.

COMPRESSOR  
DIRECTORY  
World's Best Rebuilts

95 CFM 1500 psi 8½-3½ x 1½ x 7 Chicago TCB3  
138 CFM 100 psi 7 x 7 Ingersoll ESI  
234 CFM 100 psi 9 x 9 x 9 Chicago St. (new)  
280 CFM 500 psi 10-4½ x 10 Ingersoll XOB  
343 CFM 500 psi 11-5 x 13 Worthington  
484 CFM 100 psi 12 x 11 Ingersoll ESI  
502 CFM 125 psi 12 x 13 CP-Y  
552 CFM 100 psi 13-6 x 12 Ingersoll XRB  
676 CFM 100 psi 15-0½ x 12 Ingersoll XRB  
686 CFM 100 psi 14 x 13 Ingersoll ESI  
968 CFM 100 psi 17-10 x 12 CP-OCE  
1546 CFM 100 psi 21-12½ x 14 CP-OCE  
1865 CFM 42 psi 18-10 x 12 Ingersoll XREI  
1723 CFM 110 psi 140 lbs. et Ingersoll XPV  
(excellent)  
Portable—Worthington 60 to 600 CFM

AMERICAN AIR  
COMPRESSOR CORP.

DELL &amp; 48TH STREET

NORTH BERGEN, N. J.

Telephone UNion 5-4849

## FOR SALE

By City of Los Angeles,  
Dept. of Airports

## Fog Dispersal (FIDO) Equipment

2 Pumps, Byron-Jackson,  
1600 GPM, 1500 PSI, each powered by  
1000 HP. 3 ph., 2400 VO. Westinghouse mo-  
tor with GE switchboard, panels, etc.

## 54 Misc. Valves,

4" to 14", up to 600 Lb. pressure.

## 2 Steel Fuel Oil Tanks,

125,000 gal. cap. 35' x 18' high.

## 2 Steel Corrugated Bldgs.,

40' x 40', and 20' x 30'.

All used only for operation tests. Further  
details will accompany bid forms, available  
Jan. 7, 1957. Contact Grant Anderson, In-  
ternational Airport, 5800 Avion Drive, Los  
Angeles 45, California.

## LARGE LATHE

60" x 45' or 70' C.C.

Mackintosh-Hemphill, New 1943, 62' Bed, Heavy  
Duty, 2 M. D. Carriages, Geared Head, Screw-Cut-  
ting, 60" Face Plate, 3 Steady Rests, Additional 25'  
Bed Section Allowing 70' Centers, Wt. Approx.  
160,000 lb.

Republic



MACHINERY COMPANY

THOMAS J. O'BRIEN

PRES.

134 N 3RD ST., PHILA. 6, PA.

WALnut 2-5513

## IMMEDIATE DELIVERY

## 40 EXTRA HEAVY DUTY FLAT CARS

41 ft. long—9 ft. wide

26 in. Side Sills—40 in. Center Sills

RAIL AND INDUSTRIAL EQUIPMENT CO., INC.  
30 Church Street New York 7, New York

TUBE BENDER HYD. W&W 1½, 15 HP AC  
TUBE CUT OFF HYD. TAYLOR WILSON 2"½  
ABRASIVE SAW CAMPBELL 425 CUTALATOR 4"  
SHEAR HILLES JONES 1½" BAR GUILLotine  
METALLOGRAPH B&L PHOTO & VISUAL MILLS  
ROLLING MILL 6" x 8" STD. MACH. 2 HI  
MOTOR 800 HP WEST CW 870 RPM, CONTROLS

F. H. CRAWFORD & COMPANY, INC.  
30 Church Street New York 7, N. Y.

Another

VICTOR  
VALUETop Quality  
Lowest Prices

Our Special Import . . .

DIAMOND  
WHEEL DRESSERS

Made of selected, full in-  
dividual stones, mounted in  
7/16" diameter x 6" long  
cold rolled shank.

Karat	Regular Price	Our New Price
¼	\$ 6.00	\$ 2.85
½	12.00	5.00
¾	21.00	7.50
1	30.00	10.25
1½	54.00	15.00
2	75.00	20.00
2½	102.00	26.00
3	130.00	32.00

These diamonds can be set  
in any shank to your speci-  
fications for \$1.00 each  
extra.

Order today—Immediate  
Delivery From Stock!

## VICTOR

MACHINERY EXCHANGE, INC.

Dealers in Tool Room Equipment

Dept. E, 251 Centre St.

Tel.: Canal 6-5575, New York 13, N. Y.

#2D Kearney & Trecker Rotary Head  
Tool and Die Milling Machine  
Serial #18-52-2. New 1945.

#300 Hanchett Vertical Surface  
Grinder Serial #300-17 capacity  
13" x 72".

13" Peerless Power Hack Saws.

Cleveland Punch and Shear Model  
EF—34" Throat.

No. 47 Heald Single End Borematic  
Serial #4646.

Greenfield #28 Internal Grinder  
Serial F4-11235.

Hazard Brownell Machine Tools, Inc.  
350 Waterman St. Providence 6, R. I.  
Dexter 1-8880

## BENNETT MACHINERY CO.

## VERTICAL BORING MILLS

1—10" Niles, 2 Hds., Hvy., M.D.  
1—10-16" Niles Extension Type, Heavy, M.D.

375 Allwood Rd., Clifton, New Jersey  
Phone PReston 9-8996 N. Y. Phone LOngacre 3-1722

## TREMENDOUS SAVINGS! NEW MOTORS

### Immediate Delivery

NEW AC MOTORS 3 Phase 60 Cycle									
Qu.	HP	Make	Volts	RPM	Type	Enc.			
1	920	G. E.	220/440	300	TS-6335J	Syn.			
1	400	Elec. Machy	2400/4800	360		Syn.			
1	150	Westg.	2300	1740	CS-773Z	BB			
4	150	Westg.	440	900	CSP-580C	DP BB			
6	125	Westg.	2300	1200	CSP-580S	DP BB			
11	125	Westg.	440	900	CSP-580C	DP BB			
4	100	Westg.	440	900	CSP-770C	TE FC BB			
10	100	Westg.	220/440	3600	CSP-445S	DP BB			
2	100	Westg.	440	1750	CSP-505	TE FC BB Exp. Pr.			
2	100	Westg.	440	1750	CSP-505	TE FC BB			
5	100	Westg.	220/440	1150	CSP-507	DP			
3	100	Westg.	2300	900	CSP-580C	DP BB			
1	50	F. M.	220/440	3600	QZK-404S	BB			
1	50	Rel.	2200	1760	AA-504S	TE FC BB			
5	50	Westg.	220/440	1200	CSP-445	DP BB			
1	50	Westg.	220	720	CS-754C	TE FC BB Exp. Pr.			
2	30	Wag.	440	1750	DP-405	DP BB			
2	30	Wag.	440	870	DP-445	DP BB			
3	25	G. E.	440	1740	K-364	DP BB			
5	25	Star	440	1165	NL-405	DP BB			
2	25	Wag.	440	1160	CP-444	TE FC BB			
2	25	Wag.	440	870	CP-445	TE FC BB			
8	20	G. E.	440	3470	KF-326	TE FC BB			
14	20	G. E.	440	1760	K-326	DP BB			
4	20	Wag.	440	1750	KNX-404	DP BB			
7	20	El. Dyn.	440	1155	DP-326	DP BB			
4	15	Wag.	440	1750	DP-326	DP BB			
2	15	Wag.	440	1160	DP-365	DP BB			
3	15	Wag.	440	1160	CP-404	TE FC BB			
1	10	Star	440	1160	NL-364	DP BB			
1	10	Wag.	440	870	CP-404	TE FC BB			
7	7 1/2	Westg.	440	3470	CS-254	DP BB			
5	7 1/2	Wag.	440	1750	CP-284	TE FC BB			

NEW 230 VOLT DC MOTORS									
Qu.	HP	Make	RPM	Type	Enc.				
1	60	G. E.	1750	CDM-95	DP BB				
1	40	G. E.	1750	CDM-95	DP BB				
1	30	G. E.	1750	CD-96	TE FC BB				
3	30	Cent.	1750	DN-375	DP BB				
1	30	G. E.	1750	CD-93	DP BB				
4	25	Cent.	900/1200	DN-455	DP BB				
2	25	G. E.	1750	CDM-85	DP BB				
10	25	G. E.	1200	CDM-93	DP BB				
3	20	G. E.	1750	CDM-83	DP BB				
1	20	G. E.	1200	CDM-85	DP BB				
10	15	Cent.	1750	DN-336	DP BB				
2	15	G. E.	1200	CDM-93	TE FC BB				
3	15	G. E.	1200	CDM-83	DP BB				
5	10	G. E.	1750	CD-75	TE FC BB				
2	10	G. E.	1200	CDM-66	DP BB				
4	10	G. E.	1200	CDM-85	TE FC BB				
2	10	Westg.	850	SK-83	DP BB				
6	7 1/2	G. E.	1750	CD-66	TE FC BB				
10	7 1/2	Cr. Wh.	1750		DP BB				

**DUQUESNE ELECTRIC & MFG. CO.**  
6428 Hamilton Ave., Pittsburgh 6, Pa.  
Montrose 1-5800

## IMMEDIATE DELIVERY BRAND NEW CYRIL BATH



**POWER PRESS BRAKES**  
 150-8 8' x 5/16" 10' BED  
 150-10 10' x 1/4" 12' BED  
 150-12 12' x 3/16" 14' BED

**PRESS & SHEAR MACHINERY CORP.**  
2600 EAST TIOGA STREET  
PHILADELPHIA 34, PA.  
GARfield 6-8840

## TOTAL OF 17,500-KW IN M.G. SETS

5—3500-KW, 3 Unit, Allis-Chalmers, Motor Generator Sets, Each consisting of:  
 2—1750-KW, 250/350 Volts parallel, 500/700 Volts series, 514 RPM, 5000 Amp., type HCC, rated continuous at 40 Deg. C. Allis-Chalmers DC Generators with Class B Insulation, separately excited, direct connected in the center to:  
 1—5000-HP, 3730-KW, 13800 Volts (6900 Volts), 3 Phase, 60 cycle, 514 RPM, 162 Amps., Allis-Chalmers, Synchronous Motor with Class B insulation, rated continuous at 40 Deg. C. Rise.  
 Each set equipped with a 40-KW exciter for synchronous motor fields, and a 10-KW exciter for generator fields, both 250-VDC at 514 RPM.  
 All mounted on a structural steel base approximately 27' long x 11' wide.  
 These Units are of the very latest type and design—condition excellent—were used only a short time—AC and DC Switchgear available.  
 For any additional information and price, please contact one of the following dealers closest to you:

**T. B. McCabe Company**  
4300 Clarissa Street, Philadelphia 40, Pa.  
**Moorhead Electrical Machinery Co.**  
120 Noblestown Road, Oakdale (Pittsburgh District), Pennsylvania  
**Brazos Engineering Co., Inc.**  
P. O. Box 9114, Houston, Texas  
**Duquesne Electric & Mfg. Co.**  
6428 Hamilton Avenue, Pittsburgh 6, Pa.

## TRAVELING CRANES 230V D.C.

	Tons	Make	Span
1	15	Shaw	100'
1	10	Shaw	100'
1	10	Shaw	84'
1	10	Whiting	84'
4	10	Calumet	72' 3"
1	10	Morgan	72' 3"
1	10	Calumet	72' 3"
1	10	Shaw	67' 11"
1	10	Whiting	67' 11"
1	10	Calumet	59' 4"
4	5	Shaw	72' 3"
2	5	Shaw	59' 1"
1	3 3/4	Shaw	67' 11"
1	3 3/4	Shaw	59' 1"

## LOCOMOTIVE CRANE

30 Ton Industrial Brown Hoist, Type EK, Ser. No. 11078

## DIESEL LOCOMOTIVE

45 Ton General Electric, Iron in 1943

## AIR COMPRESSORS

1—2195 CFM, I-R, PRE2, 26" x 16"x18", 354 HP AC motor.

2-758 CFM actual free delivery. Fuller type C-150-150OH, 2-stage Rotary Air Compressors, with intercoolers, aftercoolers, air-moisture, oil both filters and silencers, 100# pressure, coupled to 150 HP synchronous motors with Limitamp GE synchronous starters, ITE 400 amp interruptive switch, air receiver, piping and essential valves, NEW 1953.

**EST. 1918**  
**ELECTRICAL EQUIPMENT**  
**A.C. & D.C.**  
 MOTORS AND GENERATORS  
 One of America's Largest Stocks  
 RELIABLY REBUILT  
 IN OUR OWN SHOP  
 1 YEAR GUARANTEE  
 Send us your inquiries

**L. J. LAND INC.**  
 150 GRAND ST., NEW YORK 13, N. Y.  
 Phone: CAnal 6-6976

## FOR SALE

48 x 72 Wheelabrator Shotblast Barrel  
 Serial A51283—Installed 1944  
 75 HP total 220 volts 3 phase 60 cycles  
 Jones 675 H5 Style 1 reducer on mill drive  
 24000 CFM Schneible type HC Dust Collector  
 Installed 1944  
 40 HP drive on fan 3 HP pump  
 220/440 volts 3 phase 60 cycles  
 750 gallons settling tank

## PLANER

SCREW TYPE PLATE PLANER WITH DOUBLE TOOL HOLDER PLANES BOTH DIRECTIONS.  
 30 FT 16 CYLINDERS 8" DIA Holddowns  
 with 2 1/2" ram  
 with 4 1/2" daylight

**Cranes—for immediate sales—all DC**  
**OUTDOOR CRANES** 10 tons 84 ft w/150 ft runway  
 15 tons 100 ft w/600 ft runway  
**INDOOR CRANES** 5 tons 58 ft 66 ft 72 ft spans  
 10 tons 72 ft 82 ft 100 ft spans  
**LOCOMOTIVE CRANES** 30 tons Industrial type EK  
 Immediate inspection and sale—in the West

**A. JAY HOFMANN COMPANY**  
NARBERTH, PENNSYLVANIA

## BEST BUY OF THE WEEK!

Macintosh Hemphill 4"x4" Extra Heavy Duty Mill Type Billet Shear  
 Wt. 67,000 #, Excellent Condition

**STROM MACHINERY CORP.**  
 1829 Summer St., Hammond, Ind.

**PRESSES**

- (2) #306 BLISS, S.S.S.C., tie rod, 6" stroke, air clutch, M.D.  
 (1) #305 BLISS, S.S.S.C., tie rod, 5" stroke, air clutch, M.D.  
 (2) #5-A TOLEDO, O.B.I., flywheel type, 3" stroke, 43-ton, M.D.  
 (1) #6 TOLEDO, O.B.I., flywheel type, 3" stroke, 56-ton, M.D.

**TURRET PUNCH**

#R-43 WIEDEMANN, capacity up to 1½" hole, sheets 28" x 36", 18 station turret, depth of throat—28", anvil, die holders, work positioner and gauging table. Serial No. 150.

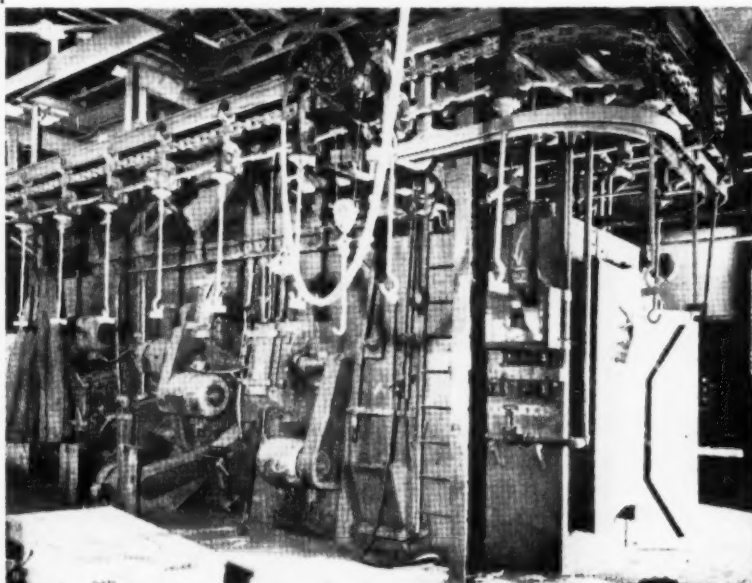
*The above is choice equipment from our present stock which is constantly changing. Let us have your inquiries.*

**POWER PRESS SPECIALISTS**

471 North 5th St. Phila. 23, Pa.  
 Market 7-1313

**OFFERING****BRIDGE CRANES**

**ARNOLD HUGHES COMPANY**  
 765 Penobscot Bldg. Detroit, Mich.  
 Woodward 1-1894

**MUST SACRIFICE****PANGBORN CONTINUOUS SHOT BLAST MACHINE**

5 Wheel Type each wheel driven by 20 Hp AC Motor. Pendulum type #458 chain conveyor for pick up and return, w/motor driven screw type conveyor for shot return to bucket elevator. Complete w/all controls and switches. Serial #180 RF-3918. Large lot of new spare parts.

REPLACEMENT COST OVER \$75,000.

MUST BE MOVED IMMEDIATELY — SPECIAL LOW PRICE!

**UNIVERSAL MACHINERY & EQUIPMENT COMPANY**

1430 N. Ninth St., Reading, Pa.

Phone: 3-5103 Collect

**CONTRACT MANUFACTURING**

Gray Iron and Semi Steel Castings, also alloyed with nickel, chrome, and molybdenum. Wood and Aluminum pattern work.

**KING FOUNDRIES, INC.**

Phone 823 North Wales, Montg. Co., Pa.  
 22 Miles from Philadelphia, Pennsylvania

**CARGO INDUSTRIES, INC. DROP FORGINGS**

for prompt attention phone John Bello  
 Devonshire 2-1200  
 Philadelphia 35, Pa.

**SHOP**

Through the Contract Manufacturing Section for the Plant with the Facilities to do your Work

**Special Washers**

We carry in stock Silicon killed steel specially suited for case-hardening. Stock dies for producing washers from .0015 to ½" thick.

**Thomas Smith Company**

294 Grove St., Worcester, Mass.

**SPECIAL MACHINERY**

DIAMITE Abrasive Resistant Castings  
 NI-RESIST Heat & Corrosion Resistant Castings  
 P M G BRONZE High Strength Acid Resistant Castings

Fully Equipped—Pattern Foundry & Machine Shop  
 Facilities—Castings to 15 tons.  
 Weatherly Foundry & Mfg. Co., Weatherly, Pa.

10 to 12 foot lengths  
 Any diameter up to 1¼ inch  
 All thread forms  
 All metals



For studs, hangers, worms, translating screws, etc.

21 Barclay St.

Eastern Machine Screw Corp., New Haven, Conn.

**PRESS FORGINGS****MERRILL BROS.**

5626 ARNOLD AVENUE  
 MASPETH, QUEENSBORO, N. Y.

**MEEHANITE METAL**

and gray iron and alloyed castings  
 —rough or machined—  
 from 1 pound to 30 tons

For General Engineering—Corrosion—  
 High Temperature—Wear Resistance  
**JOBGING MACHINE WORK**  
 Builders Of Special Machinery

**ROSEDALE****FOUNDRY & MACHINE CO.**

1731 PREBLE AVE., PITTSBURGH 33, PA.  
 CEder 1-4007

**DROP FORGE DIES**

Forging Engineers—Die sinkers—Manufacturers of drop forge dies and hot work tools for presses and upsetters.

**COMMERCIAL DIE COMPANY**

7861 Intervale Ave., Detroit 4, Mich.  
 Phone: WEBSTER 3-7104 Cable Code "Comdie"

**PIPE CUT TO SKETCH**

We cut and thread all sizes of steel pipe to sketch. Our up-to-date machinery has a capacity of ½" to 12" pipe diameter. We specialize in production runs of cut pipe in large quantities in uniform length. Please call on us for quotations.

AUSTIN MFG. CORP.  
 61 Austin Street Worcester, Mass.

# OLSON

## SCREW MACHINE PRODUCTS

Made to your specifications and tolerances. From smallest up to 2 5/8" diameter in steel, brass and aluminum.



**OLSON MANUFACTURING CO.**  
101 Prescott St., Worcester, Mass.

**NepSCO**  
NEW ENGLAND  
PRESSED STEEL COMPANY  
*Contract Manufacturer since 1914*  
METAL STAMPINGS  
SPECIALTIES — APPLIANCES  
*For Industrial and Domestic Users*  
P.O. BOX 29  
NATICK MASSACHUSETTS

MEEHANITE  
and NI-HARD CASTINGS  
PATTERNS  
MACHINE and PLATE SHOP WORK  
CUSTOM-BUILT MACHINERY  
HARDINGE MANUFACTURING CO.  
240 ARCH ST., YORK, PA.

**FORGINGS**  
*Hammered Steel Forgings*  
UP TO 5,000 LBS. EACH  
ALL TYPES  
Smooth Forged — Finished — Rough Turned  
Hollow Bored  
and Heat Treated to Specifications  
CRANKSHAFTS—SHAFTING  
CONNECTING RODS  
Roll—Gear Blanks—Pistons and Miscellaneous Forgings  
**BAY CITY FORGE CO.**  
ERIE, PA.  
*Over a Quarter of a Century of Dependable Service and Quality Products*

**DROP FORGINGS**  
Special Forgings of Every Description.  
We solicit your prints or model for quotation.  
**Wilcox Forging Corporation**  
Mechanicsburg Penna.

**THE FORMULA:**  
Multi-operation presses  
plus  
Yankee skilled workmen  
over  
Eighty years manufacturing  
know-how equals  
Low cost metal stampings  
And precision assemblies  
To meet your needs  
**The GREIST MANUFACTURING CO.**  
646 Blake St., New Haven 15, Conn.

Let us quote on  
**STAMPINGS and ASSEMBLIES**  
from drawing or sample  
Drilling . . . Blanking . . . Riveting  
. . . Forming . . . Tapping . . .  
Welding . . . Toolmaking of course  
COMPLETE DESIGN AND DEVELOPMENT FACILITIES  
**HUEBEL MFG. CO., INC.**  
763 Lexington Ave. Kenilworth, N. J.

STANDARDIZE WITH  
**STANDARD**  
MADE TO YOUR  
SPECIFICATION  
**STEEL TUBING**  
CARBON • ALLOY AND STAINLESS  
SEAMLESS OR WELDED  
PRESSURE AND MECHANICAL  
MILL OR WAREHOUSE QUANTITIES  
**STANDARD TUBE SALES CORP.**  
78-01 WOODHAVEN BLVD. • BROOKLYN 27, N. Y.

**TOOL AND DIE WORK**  
Full facilities for the manufacture of small machine parts. Send blue prints for quotations. Prompt Service.  
**DON'S MACHINE SHOP**  
1833 N. 3rd Street Harrisburg, Pa.

## WELDED or RIVETED STEEL PLATE FABRICATION

- \* Gas Seal Hoods for Blast Furnaces
- \* Furnace Roof Rings
- \* Cinder Cooling Cars
- \* Billet Cars
- \* Ingot Cars
- \* Ladle Cars
- \* Hopper Cars
- \* Gondola Cars
- \* Heavy Truck Bodies
- \* Boiler Casings
- \* Boiler Breechings
- \* Flues and Ducts
- \* Condenser Shells
- \* Condenser Piping
- \* Heavy Turbine Housings
- \* Hoppers and Bunkers
- \* Tanks and Vats
- \* Pressure Vessels
- \* Wind Tunnels
- \* Crane Bridge Girders
- \* Trolley Frames and Trucks
- \* Rigid Frames
- \* Roll-Over Fixtures
- \* Engine Frames and Bases
- \* Crawler Frames
- \* Press Platens and Beds
- \* Press Columns
- \* Heavy Machinery Parts and Assemblies
- \* Design Conversion of Castings to Weldments

MACHINING  
\* Complete Machining Service—Facilities for Heavy Work of Unusual Dimensions

THE R. C. MAHON COMPANY  
DETROIT 34, MICHIGAN  
Branch Offices in New York and Chicago

# MAHON



## CANADIAN MANUFACTURER OF INDUSTRIAL EQUIPMENT

wishes to build U. S. designed equipment for the Canadian market, under license or otherwise. Can also handle sale if no conflict with existing lines. Facilities include engineering department, pattern shop, foundry, 300-man modern machine shop, including 9 boring mills, 6 gear machines, structural and assembly shops. 50-page brochure available on request.

ADDRESS BOX G-464

Care The Iron Age, Chestnut & 56th Sts., Phila. 39

## STA-FAST STEEL WEDGES



sharp edges give holding power like a screw. Self-Aligning Steel Belt Fasteners  
Standard Steel Rivets used with Self-Aligning Fasteners

STAMPINGS PUNCHINGS  
WASHERS

to your specifications  
Catalog sent upon request  
SALING MANUFACTURING COMPANY  
Standard-Belt-Fastener Division  
UNIONVILLE, CONNECTICUT

## DROP FORGINGS

To Your Specifications  
Prompt Quotations  
BALDT ANCHOR CHAIN & FORGE DIVISION  
P. O. Box 350—Chester, Pennsylvania

## GEM INSULATING FIREBRICK



THE GEM CLAY FORMING CO.  
SEBRING, OHIO

## EQUIPMENT AND MATERIALS WANTED

### WANTED

#### NEW SURPLUS STEEL USED

Structurals, Plate, Pipe and Tubing

*Consumers Steel & Supply Co.*

P. O. BOX 270, RACINE, WISCONSIN

### WANTED

300 to 500 tons of 5" 6" and 8" black steel pipe lapweld or seamless

**J. G. Piscitelli and Son**

Hudson Falls, New York  
Telephone 4-0000

### WANTED

#### PLATE BENDING ROLLS

Initial type Drop End  
power elevation 24' x 1/4"

Details with pictures.

ADDRESS BOX G-466

Care The Iron Age, Chestnut & 56th Sts., Phila. 39

### WANTED!

#### ROLL FORMER MACHINE

30" between housing  
2" Dia. Shaft—6 Stands  
Age of Machine Secondary

**AAA PRODUCTS COMPANY**

Allen & Bristol Sts., Phila. 37, Pa.

## WEISS STEEL CO. INC.

600 WEST JACKSON BLDG.  
CHICAGO 6, ILLINOIS

Buyers of Surplus Steel Inventories

38 Years of Steel Service

### WANTED

#### SURPLUS STEEL

**WALLACK BROTHERS**

7400 S. Damen Ave. Chicago 36, Illinois

### WANTED

#### BRIDGE CRANES

**ARNOLD HUGHES COMPANY**

765 PENOBSCOT BLDG. DETROIT, MICH.  
WOODWARD 1-1894

## SHEAR WANTED

1/2" Capacity  
120" Cutting Length

Address: P. O. Box 1091  
Macon, Georgia

### WANTED

10" or 12" three high 5 stands Bar Mill.  
Complete with Electric Motor, Excellent condition.

Address ACEROS CORSA, S.A.  
Czda. de Guadalupe No. 183  
MEXICO 14, D.F.

## EMPLOYMENT EXCHANGE

### SITUATION WANTED

POSITION as shop superintendent, or planning head, in a progressive general spring producing plant. Broad experience in automatic coiling and supervision. Excellent references. Address Box G-467, Care The Iron Age, Chestnut & 56th Sts., Philadelphia 39.

### REPRESENTATIVE WANTED

BUYER-P.A.—Wanted by Steel Warehouse with several branches to order product. Managers—Requisitions—and to coordinate purchases and expedite deliveries. Advise experience and salary requirements. Address Box G-465, care The Iron Age, Chestnut & 56th Sts., Philadelphia 39.

### PLANNING TO BUY A PLANT?

What you are looking for may be in *The Iron Age*

Look here first

### HELP WANTED

CHIEF DESIGN ENGINEER—Mechanical Engineer degree preferred—Broad experience required for design of facilities for integrated steel plant located in Southwest. Excellent opportunity in a well established, fast expanding organization, Pension plan, group hospitalization, vacation, sick leave, etc. Submit complete personal and professional resume in first letter. Address Box G-460, care The Iron Age, Chestnut & 56th Sts., Philadelphia 39, Pa.

ROLL TURNER—Wanted experienced roll turner for merchant mill shapes. Southern location, starting March 1st. Address Box G-468, Care The Iron Age, Chestnut & 56th Sts., Philadelphia 39.

### Electrical Engineer

Steel Fabrication, Northeast Ohio. To reduce electrical down-time production, maintenance equipment to a minimum. Establish preventive electrical maintenance program.

ADDRESS BOX G-463

Care The Iron Age, Chestnut & 56th Sts., Phila. 39

## STAFF ENGINEERS

Kaiser Steel's multi-million dollar expansion program has created permanent openings in Plant Engineering Department at our Fontana plant.

Attractive staff engineering assignments available on large construction program involving rolling mills and steel making facilities.

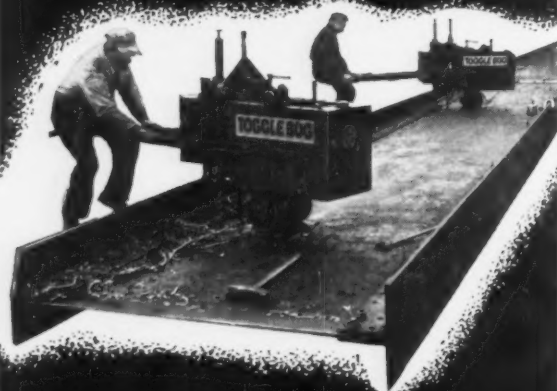
Send resume including salary requirements to

Employment Manager

**KAISER STEEL CORP.**

P. O. Box 217  
Fontana, California

move the drill,  
not the material



save time and money with the  
**Guibert TOGGLE BUG**  
—a versatile, portable drill press

- Drills—reams—countersinks.
- Move the machine, not the material... the "Toggle Bug" can pay for itself in practically no time from savings on handling costs alone.
- Drill several pieces simultaneously... cut layout time, cut drilling time, and insure a perfect fit on operations such as building up girders.
- For holes to 2 1/2" diameter and larger.
- Material need not be leveled.
- Drills in any spot on any structural shape.
- Easily moved and operated by one man.
- Drilling the material where it lies eliminates costly delays when crane and hoist facilities are overloaded.
- When shops are over-crowded, drill right out in the yard.
- Backed by more than a quarter of a century of use by steel fabricators, shipyards, railroad car rebuilding and repair shops and others with similar drilling problems in all parts of the world.
- Free engineering service—just tell us about your drilling, reaming or countersinking problem and we'll tell you how the "Toggle Bug" can help you solve it.

**Guibert Steel Company**

P. O. Box 4342 Pittsburgh 4, Pa.

## ADVERTISERS

An asterisk beside the name of an advertiser indicates that a booklet, or other information, is offered in the advertisement. Write to the manufacturer for your copies today.

A	
AAA Products Co. ....	401
Aceros Corsa, S. A. ....	400
*Acheson Colloids Co. ....	303
Air Reduction Sales Company	278 & 279
*Airline Welding & Engineering	357
Airtherm Mfg. Co. ....	394
Ajax Electric Co., Inc. ....	4
Ajax Electric Furnace Corp. ....	4
Ajax Electro Metallurgical Corp. ....	4
Ajax Electrothermic Corp. ....	4
Ajax Engineering Corp. ....	4
*Ajax Manufacturing Co., The ....	307
Alan Wood Steel Co. ....	192
*Alamite Div., Stewart Warner Corp. ....	63
Allegheny Ludlum Steel Corp. ....	108
Alliance Machine Co., The ....	139
Alter Company, Alloy Metal Division ....	367
American Air Compressor Corp. ....	397
American Brass Co., The ....	83
American Cast Iron Pipe Co., Special Products Division ....	116
American Chemical Paint Co. ....	202
American Gas Association ....	84
*American Gas Furnace Co. ....	65
*American Manganese Bronze Co. ....	45
American Monorail Co., The ....	30
American Optical Co. ....	Between Pages 32 & 33
*American Pulverizer Co. ....	249
American Roller Die Corp. ....	322
*American Schiess Corporation ....	381
American Screw Co. ....	28
American Shear Knife Co. ....	356
American Steel & Wire Div., United States Steel Corp. ....	97
Anderson, Grant ....	397
Anso Corporation ....	120
Apex Tool & Cutter Co. ....	382
Armco Steel Corp. ....	6
Armel, James P. ....	397
*Armstrong-Blum Manufacturing Co. ....	58
Armstrong Bros. Tool Co. ....	61
Arwood Precision Casting Corp. ....	223
Atlantic Steel Products Co. ....	384
Atlas Car & Mfg. Co., The ....	255
Atlas Mineral Products Co. ....	243
Austin Manufacturing Corp. ....	399
*Aviation Developments, Inc. ....	225
B	
Babcock & Wilcox Co., The Refractories Division ....	93
Bailey, William M., Co. ....	134
Baker, J. E., Co., The ....	76
Baldt Anchor, Chain & Forge Div. ....	401
Baldwin-Lima-Hamilton Corp., Construction Equipment Div. ....	91
Barium Steel Corp. ....	141
*Barksdale Valves ....	405
Bay City Forge Co. ....	400
Bearings, Inc. ....	201
*Beatty Machine & Mfg. Co. ....	320
Belyea Co., Inc. ....	394
Bennett Machinery Co. ....	397
Bertsch & Company ....	82
Bethlehem Steel Co. ....	1
Binks Mfg. Co. ....	261
Birdsboro Steel Fdry. & Machine Co. ....	128
Blaw-Knox Co., Foundry & Mill Machinery Division	Between Pages 64 & 65
Bliss, E. W., Co., Press Div. ....	34 & 35
*Boston Gear Works ....	44
Brainard Steel Div., Sharon Steel Corp. ....	99
Bristol Brass Corp., The ....	299
Brownell, Hazard, Machine Tools, Inc. ....	397
Browning, Victor R., & Co., Inc. ....	384
Buffalo Bolt Company Div. of Buffalo-Eclipse Corp. ....	241
Buffalo Forge Co. ....	Between Pages 96 & 97
Builders Iron Wks. ....	396
*Bullard Co., The ....	Between Pages 32 & 33
*Bunting Brass & Bronze Co. ....	253
C	
*Cambridge Wire Cloth Co., The ....	251
*Carborundum Co., Refractories Div. ....	353
Carco Industries, Inc. ....	399
Carlson, G. O., Inc. ....	130 & 131
*Carlstrom Pressed Metal Co., Inc. ....	326
Carpenter Steel Co., The ....	54 & 55
Carpenter Steel Co., The, Alloy Tube Division ....	52
Carpenter Steel Co., Webb Wire Division ....	302
Cattie, Joseph P., & Bros. ....	384
Chemstone Corporation ....	233
Chicago Concrete Breaking Co. ....	67
*Chicago Rawhide Manufacturing Co. ....	144
*Chicago Tool & Engineering Co. ....	384
*Chisholm-Moore Hoist Div. ....	245
*Cincinnati Milling Machine Co., The ....	282 & 283
*Cincinnati Shaper Co., The ....	56 & 57
Clearing Machine Corp., Div. U. S. Industries, Inc. ....	194
Cleveland-Cliffs Iron Co., The ....	80
Cleveland Instrument Co., Inc. ....	308
Cleveland Pressed Products Corp. ....	310
*Cleveland Tramrail Div., The, Cleveland Crane & Engineering Co. ....	24 & 25
*Climax Molybdenum Co. ....	379
Cold Metal Products Co., The ....	265
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. ....	Between Pages 96 & 97
Columbia-Genova Steel Div., United States Steel Corp. ....	97

## IN THIS ISSUE

Columbia Southern Chemical Corp.	136
Commercial Die Co.	399
Commercial Equipment & Machinery	392
Conco Engineering Works, Crane & Hoist Division	259
*Cone Automatic Machine Co., Inc.	77
Consolidated Railway Equipment Co.	396
Consumers Steel & Supply Company	401
Continental Foundry & Machine Div., Blaw-Knox Company	Between Pages 64 & 65
Continental Steel Corp.	200
Copperweld Steel Co.	Inside Front Cover
Cox & Sons Co., The	384
Crawford, F. H., & Co., Inc.	397
*Cromwell Paper Co.	177
Cross Company, The	14 & 15
Crucible Steel Casting Co.	382
*Cullen-Friedstet Co.	331
Curry, Albert, & Co., Inc.	394
Cutler-Hammer, Inc.	Back Cover

### D

*Date Corporation	325
*Danyl Machine Specialties, Inc.	37
Davis Keyseater Co.	384
*DeLaval Steam Turbine Co.	21
Delta Welder Corporation	403
*Detrex Chemical Industries, Inc.	257
Detroit Steel Corp.	198 & 199
*Diamond Manufacturing Co.	302
Danahue Steel Products Co., Inc.	392
Dan's Machine Shop	400
Dony, D. E., Machinery Co.	392
*Drop Forging Association	247
Du Pont de Nemours, E. I., & Co., Inc., Electrochemicals Dept.	Between Pages 96 & 97
Duquesne Elec. & Mfg. Co.	398
*Duraloy Co., The	306
Dykem Company, The	384

### E

*Eastern Machine Screw Corp., The	328 & 399
Eastern Machinery Co., The	394
Eastern Tool & Stamping Co., Inc.	184
Easton Car & Construction Co.	328
Electric Controller & Mfg. Co., The, Div. of Square D Co.	287
*Electric Furnace Co., The	276
*Electro-Alloy Division, American Brake Shoe Co.	98
*Electro Metallurgical Co., a Div. of Union Carbide & Carbon Corp.	46 & 47
Emmerman Machinery Corp.	393
Enterprise Galvanizing Co.	384
*Enthone, Incorporated	42
*Erie Strayer Co.	239
Espen-Lucas Machine Works, The	313
*Euclid Crane & Hoist Co., The	85
Ex-Cell-O Corporation	358
Excelsior Leather Washer Mfg. Co.	321

### F

Fairfield Manufacturing Co.	248
*Falk Corporation	129
Falk Machinery Co.	392
Fate-Root-Heath Co.	121
*Federal Bearings Co., Inc.	36
*Federal Press Co., The	90
Federal Products Corp.	75
Fellows Gear Shaper Co., The	26 & 27
Finkl, A., & Sons Co.	20
*Fischer Special Mfg. Co.	227
Foots Bros. Gear & Machine Corp.	217
Foster, Frank B., Inc.	396
Foster, L. B., Company	188
Frank, M. K.	396

### G

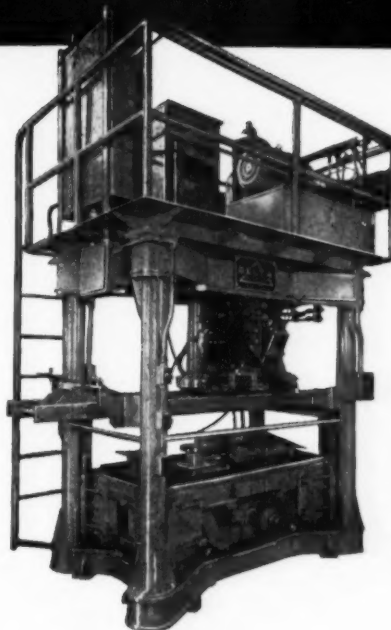
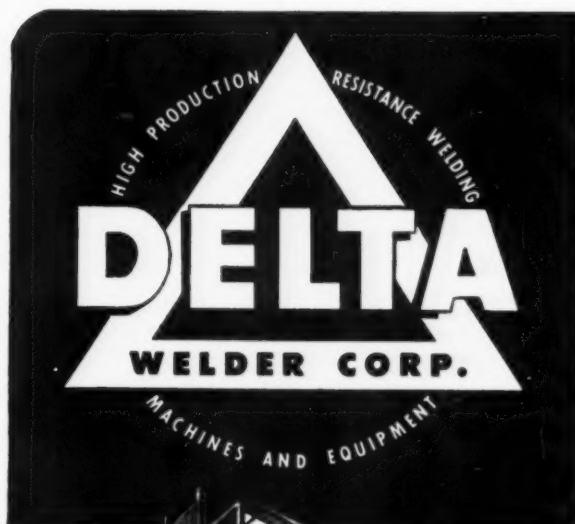
*Gallmeyer & Livingston Co.	318
Gem Clay Forming Co., The	401
General Aniline & Film Corp.	120
Globe Steel Abrasive Co.	332
Goodman Electric Machinery Co.	388
Goodyear Tire & Rubber Co., Industrial Products Div.	10
Goss & DeLeeuw Machine Co.	384
Gordon, Claude S.	321
Gray, G. A., Company	18 & 19
Great Lakes Steel Corp.	181
Greenlee Bros. & Co.	53
Greist Manufacturing Co., The	400
Griffin Manufacturing Co.	384
Guibert Steel Company	402

### H

Hallden Machine Co., The	289
*Hansen Manufacturing Co.	300
Hanson-Van Winkle-Munning Co.	Between Pages 128 & 129
Harbison Walker Refractories Co.	22 & 23
Hardinge Mfg. Co.	400
Harvey Aluminum Sales, Inc.	74
*Haynes Stellite Company, a Div. of Union Carbide & Carbon Corp.	51
Hendrick Manufacturing Co.	237
Henry, A. T., & Co., Inc.	387
Hewitt-Robins, Inc.	104 & 105
Hill Acme Co., The, Cleveland Knife Div.	383
Hofmann, A. Jay	398
Holcroft & Company	205
*Homestead Valve Mfg. Co.	311
*Hooker Electrochemical Co.	114
*Hough, Frank G., Co., The	406
Huebel Mfg. Co., Inc.	400
Hughes, Arnold Co.	399-401
Hyatt Bearings Div., General Motors Corp.	32
Hyde Park Foundry & Machine Co.	126
Hyman, Joseph, & Sons	390

### I

Independent Engineering Co.	330
Industrial Brownhoist Corp.	68



High production resistance welding equipment and automation devices . . . designed, engineered, and manufactured by Delta Welder . . . that's the "know-how" which assures lower production costs and improved product quality!

The record of outstanding performance compiled by Delta Welder equipment and automation devices is worth your examination.

Permit our sales engineers to show you Delta Welder equipment developments and machines that are saving time and money for nationally known manufacturers. Write or call. No obligation.



**DELTA WELDER CORPORATION**  
8525 Livernois • Detroit 4, Michigan

## METALWORKING BRIEFS

### Government Denies Fast-Tax For Steel

The Administration's decision not to reopen any of the steel expansion goals kills more than \$2.3 billion in applications for fast-tax amortization. The decision is based on word from the Defense Dept. that its requirements for most materials in the future will be down. The decision to restrict tax-am tightly to defense requirements involves no new policies. Reopening of the steel goals to ease current shortages would be "contrary to the intent of Congress" and would result in preferential treatment, Office of Defense Mobilization says.

### ODM Limits Steel Allocations

Extension of allocations to help speed tanker construction would distort supplies for all other consumers, ODM ruled. The agency decided to hold allocations to strictly defense and atomic energy needs. Top-level officials considered granting tankers priorities, particularly for scarce steel products. But such businesses as machine tools and freight cars—also defense-supporting industries—would get less if these products were channeled to tankers, ODM ruled. Eventually, the outcome would have been full controls.

### Steel Capacity Up 5 Million Tons

Steel mills added over 5 million tons to capacity in 1956, says American Iron and Steel Institute. The new capacity figure is 133,459,150 tons, compared with 128,363,090 tons at the start of 1956. Blast furnace capacity rose 1.3 million tons to 86.8 million tons. Coke ovens of the industry are now capable of turning out 72.9 million tons, up 1.5 million tons.

### Zirconium Plant Gets Tax-Am Certificate

NRC Metals Corp., a subsidiary of National Research Corp., was granted a Certificate of Necessity by ODM for its zirconium plant under construction at Milton, Fla. The company was granted a 5-year depreciation period on 75 pct of the \$7.2 million estimated cost of the plant.

### Cost-of-Living Increase For Labor

A 3¢ an hour cost-of-living increase went into effect for steel labor this month. Escalator clauses in union contracts called for a 3¢ increase if the Bureau of Labor Statistics Consumer Price Index reaches 117.5. The Index was 116.2 on June 15, advancing to 117.8 on Nov. 15. Under most contracts, cost-of-living adjustments are applied each six months.

### National Tube Blast Furnace Is Relined

National Tube Div., U. S. Steel Corp., announced it has put back in operation its No. 4 blast furnace at National Works, McKeesport, Pa. The furnace was closed down for relining last Oct. 28. It has a daily rated capacity of 884 tons.

## ADVERTISERS

Ingersoll-Rand Impactool Div. . . . .	110	*May-Fran Engineering, Inc. . . . .	354 & 355
Ingersoll Steel Division, Borg-Warner Corporation . . . . .	115	Meehanite Metal Corp. . . . .	280 & 281
Iso Mite Automotive Processes, Inc. . . . .	334	Merrill Brothers . . . . .	399
International Nickel Co., Inc., The . . . . .	64	Mesta Machine Co. . . . .	122 & 123
Iron & Steel Products, Inc. . . . .	386	*Micromatic Hane Corp. . . . .	284 & 285
Transides Co., The . . . . .	270 & 271	Miles Machinery Co. . . . .	397
<b>J</b>			
Johnson Bronze Co. . . . .	88	Miller, Harry, Corp. . . . .	33
*Jones & Laughlin Steel Corp. . . . .	291, 293, 295 & 297	Milne, A., & Co., Inc. . . . .	78
<b>K</b>			
KS M Products, Inc., Stud Welding Div. . . . .	330	Mississippi Valley Equipment Co. . . . .	396
Kaiser Aluminum & Chemical Sales, Inc., Kaiser Chemicals Div. . . . .	100 & 101	Morgan Construction Co. . . . .	5
Kaiser Steel Corp. . . . .	388 & 401	Morrison Railway Supply Co. . . . .	396
Kane & Roach, Inc. . . . .	86	Mundt, Chas., & Sons . . . . .	Between Pages 32 & 33
Kaplan, M. S., Co. . . . .	365	<b>N</b>	
Kasle Steel Corp. . . . .	392	National Broach & Machine Co. . . . .	89
Kaydon Engineering Corp., The . . . . .	275	National Machinery Exchange . . . . .	391
Kennametal, Inc. . . . .	112	National Malleable & Steel Castings Co. . . . .	219
*Kiddle, Walter, & Co., Inc. . . . .	13	National Roll & Foundry Co. . . . .	109
King Foundries, Inc. . . . .	399	National-Standard Co. . . . .	315
King Fifth Wheel Co. . . . .	138	National Steel Corp. . . . .	135 & 181
King Tester Corporation . . . . .	377	National Tube Div., United States Steel Corp. . . . .	97
*Kinnear Mfg. Co., The . . . . .	8	*Nelson Stud Welding Div. of Gregory Industries, Inc. . . . .	316 & 317
Klaff, H., & Co., Inc. . . . .	375	New Britain Machine Co., The . . . . .	Between Pages 96 & 97
Kutztown Foundry & Machine Corp. . . . .	377	New England Pressed Steel Co. . . . .	400
<b>L</b>			
Laclede Steel Co. . . . .	196	*New Jersey State of, Department of Conservation & Economic Development . . . . .	288
Land, L. J., Inc. . . . .	398	*Niagara Blower Co. . . . .	286
Landis Machine Co., Inc. . . . .	16 & 17	*Niagara Machine & Tool Works . . . . .	124 & 125
Lang Machinery Co. . . . .	392	*Nice Ball Bearing Co. . . . .	303
Lansing Stamping Co. . . . .	310	<b>O</b>	
La Salle Steel Co. . . . .	103	O'Brien, Clarence J. . . . .	397
Latrobe Steel Co. . . . .	137	O'Neil-Irwin Mfg. Co. . . . .	9
*Lewis Machine Co., The . . . . .	378	*Ohio Crankshaft Co., The . . . . .	91
*Lincoln Electric Co. . . . .	107	*Oliver Corp., The A. B. Farquhar Division . . . . .	215
Lindberg Engineering Co. . . . .	45	Olson Manufacturing Co. . . . .	380 & 400
Linde Air Products Co., A Div. of Union Carbide & Carbon Corp. . . . .	79	Ornitz Equipment Corp. . . . .	394
*Liquid Carbonic Corporation . . . . .	94	Ortner Co. . . . .	377
Loftus Engineering Corporation . . . . .	119	<b>P</b>	
Luria Bros. & Co., Inc. . . . .	363	*Pennsylvania Engineering Corp. . . . .	333
<b>M</b>			
McKay Machine Co., The . . . . .	31	Perkins Machine & Gear Co. . . . .	263
McCabe, T. B., Co. . . . .	389 & 398	*Philadelphia Gear Works, Inc. . . . .	72
*MacLeod Company, The . . . . .	385	Phila. Nail & Wire Co. . . . .	397
Machine Tool Sales Co. . . . .	388	Pickands, Mather, & Co. . . . .	111
*Mahon, R. C., Co., The . . . . .	62 & 400	Piscitelli, J. G., & Son . . . . .	401
Mallory-Sharon Titanium Corp. . . . .	118	Pittsburgh Engineering & Machine Co. . . . .	186
*Manco Manufacturing Co. . . . .	207	*Plymouth Locomotive Works, Div. of The Fate-Root-Heath Co. . . . .	121
Manhattan Rubber Div., Raybestos-Manhattan, Inc. . . . .	38 & 39	Pooler Foundry & Machine Co. . . . .	384
Manning, Maxwell & Moore, Inc. . . . .	319	*Portage Machine Co., The . . . . .	301
Marshall Railway Equip. Corp. . . . .	396	Power Press Specialists . . . . .	399
		Pratt & Whitney Co., Inc. . . . .	304 & 305
		Press & Shear Machinery Corp. . . . .	398
		Purdy Company, The . . . . .	390
		<b>R</b>	
		Rail & Industrial Equip. Co., Inc. . . . .	397
		*Raybestos-Manhattan, Inc., Manhattan Rubber Div. . . . .	38 & 39
		*Red Seal Metals Co. . . . .	266



## IN THIS ISSUE

*Reliance Electric & Engineering Co.	92
Reliance Steel Div., Detroit Steel Corp.	198 & 199
Republic Machinery Co.	397
Rhode Island Tool Co.	383
Robinson Steel Warehouse Co.	394
Roebbing's, John A., Sons Corp.	Between Pages 128 & 129
Rollway Bearing Co., Inc.	140
Rosedale Foundry & Machine Co.	399
Rotary Electric Steel Co.	29
Russell, Burdall & Ward Bolt & Nut Co.	183
*Ruthman Machinery Co., The	331
Ryerson, Jos. T., & Son, Inc.	142

### S

SKF Industries, Inc.	Between Pages 306 & 307
Saling Manufacturing Company	401
Sandusky Foundry & Machine Co.	235
Sandvik Steel, Inc.	50
Schatzmann, M. J.	392
Scott Paper Co.	127
Sei-Rex Precious Metals, Inc.	324
Service Foundry Div. of Avondale Marine Ways, Inc.	378
Sessions, J. H., & Son	324
*Sheffield Corp.	69
Shenango-Penn Mold Co.	231
*Shepard Niles Crane & Hoist Corp.	312
*Silent Hoist & Crane Co.	329
Simonds Gear & Manufacturing Co., The	286
Smith, Thomas, Co.	399
Snyder Tool & Engineering Co.	40 & 41

Southern Screw Co.	11
Speed-D-Burr Corporation	190
Spencer Turbine Company, The	314
Spray Products, Inc.	277
Sprague, C. H., & Son Co.	351
*Square D Co., EC & M Div.	287
Standard Pressed Steel Co.	96
*Standard Shop Equipment Co.	380
Standard Tube Co., The	132
Standard Tube Sales Corp.	400
Stanhope, R. C., Inc.	388
Stanley Berg Machinery Co.	392-396
Steel & Tube Div., Timken Roller Bearing Co.	178
Strom Machinery Corp.	398
Sun Shipbuilding & Dry Dock Co.	133
Superior Steel Corp.	Between Pages 306 & 307
Surface Combustion Corp., Heat Treat Division	272
Swindell-Dressler Corp.	113

### T

Taylor-Winfield Corp.	229
Tennessee Coal & Iron Div., United States Steel Corp.	97
Thermal Research & Engineering Corp.	221
Thomas Machine Mfg. Co.	43
Timken Roller Bearing Co., The, Steel & Tube Division	178
Tippins Machinery Co.	388
*Tomkins-Johnson Co., The	267
*Towmotor Corp.	102
*Townsend Company, The	209
*Trabon Engineering Corp.	Inside Back Cover

Tractor & Equipment Co.	397
Treadwell Construction Co.	327

### U

Ulbrich Stainless Steels	60
Union Carbide & Carbon Corp., Electro Metallurgical Co.	46 & 47
Union Carbide & Carbon Corp., Haynes Stellite Co.	51
Union Carbide & Carbon Corp., Linde Air Products Co.	79
United Engineering & Foundry Co.	Between Pages 32 & 33

*U. S. Industrial Chemicals Co., Division National Distillers Products Corporation	70
United States Steel Corp.	12, 97
United States Steel Export Co.	97
United States Steel Supply Div., United States Steel Corp.	12, 97
U. S. Steel Wire Spring Co., The	382
Universal Machinery & Equipment Co.	394 & 399

### V

Valley Mould & Iron Corp.	309
Vanadium Corp. of America	117
*Vickers, Inc., Div. of Sperry Rand Corp.	66
Victor Equipment Co.	59
Victor Machinery Exc.	397
*Victor Saw Works, Inc.	87
Virginia Gear & Machine Corp.	72

### W

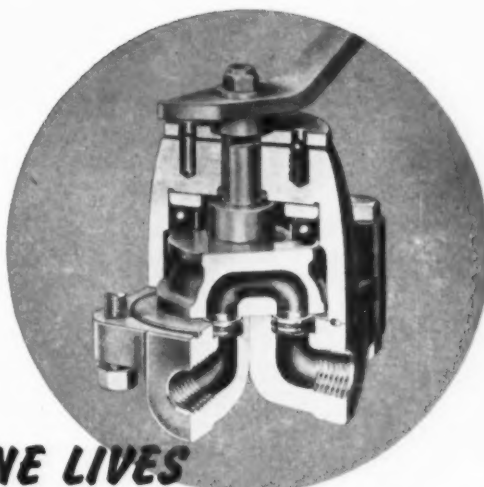
*Wagner Electric Corp.	323
Wallack Bros.	401
Ward Steel Co.	326
Washington Steel Corp.	106
*Waterbury-Farrel Foundry & Machine Co.	95
Wean Engineering Co., Inc., The	73
Weatherly Foundry & Mfg. Co.	399
Weirton Steel Co.	135
Weiss Steel Co., Inc.	401
Westinghouse Electric Corp.	48 & 49
Wheelock, Lovejoy & Co., Inc.	211
Wheland Co., The	324
White Pine Copper Co.	396
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp.	Between Pages 96 & 97
Wigglesworth Industrial Corp.	388
Wilcox Forging Corp.	400
*Williams, J. H., & Co.	213
Wilson, K. R., Inc.	298
Wyatt, C. G., Machinery Co.	395
Wyckoff Steel Co.	269

### Y

Yoder Co., The	71
Youngstown Sheet & Tube Co., The	Between Pages 32 & 33

## CLASSIFIED SECTION

Clearing House	386-399
Contract Manufacturing	399-401
Employment Exchange	401
Equipment & Materials Wanted	401



## NINE LIVES

### OF UNINTERRUPTED SERVICE

(and no loss of sealing qualities)

### IN MANUAL "SHEAR-SEAL" OIL VALVES

1500, 3000 and 6000 P.S.I.

WHERE	HOW	WHY
to improve operation of Test Equipment	Shear-Seal Valves are leakproof and <i>stay</i> leakproof for years* without service or maintenance. (No internal port to port leakage and of course no external leakage.)	Sealing qualities actually improve with use due to wear compensating lapping action of Shear-Seals
	They give quick action of full flow through round tubular flow passages	No spools or poppets obstructing flow
to provide unmatched control of oil hydraulic cylinders, presses and motors	Excellent throttling	Smooth action to any degree of flow without fighting the fluid pressure
	Quick opening & closing with surge dampening action	A quarter turn of the handle opens full round flow passages without surges caused by slamming spools or poppets
	Simplified Maintenance	By removing four bolts and without touching the plumbing all valve parts are easily accessible for replacement or service (seldom needed)

\* Over three million cycles, without signs of efficiency loss, were clocked for 4-Way valves on a machine making high pressure impulse tests of aircraft hose. Another group of 24 Dual pressure valves has been operating since 1951 for 22 hours a day, five days a week, on presses making rubber casters and wheels and they are still sealing tight with practically no maintenance.

We'll be glad to refer to you similar examples in your own vicinity. To get complete data on Shut-off, 4-Way and Dual pressure Valves for oil pressures to 1500, 3000 and 6000 P.S.I. ask for bulletins 0-5 and 5-DP.

## BARKSDALE VALVES



5125 Alcoa Avenue, Los Angeles 58, California

# Better Engineered for Unequaled Production

## Shortest Turning Radius

The model HA can work where others can't because it has a shorter turning radius than any comparable tractor-shovel — can go through narrow doorways and between spaces less than  $4\frac{1}{2}$  feet wide. With a turning radius of only 6 feet  $3\frac{1}{2}$  inches it easily turns corners of 6 foot aisles.

## Higher Dumping Height

This "PAYLOADER" can deliver its loads over bin or hopper edges up to  $6\frac{1}{2}$  feet high. The bucket in maximum dump position can clear heights of 5 feet  $2\frac{1}{2}$  inches with a forward reach of more than 2 feet beyond front of machine. Loads can be dumped as fast or slow as desired, and at any height.

## Biggest Capacity (18 cu. ft. payload)

With a bucket capacity of 18 cu. ft. payload and 14 cu. ft. struck the model HA has a carrying capacity up to 25% greater than all comparative machines and even more than some bigger, heavier machines. Better engineering including the exclusive  $40^\circ$  bucket tip-back action are the reasons the model HA handles more tons per load and more loads per hour.

## Easiest Operating

The entire hydraulic control of the model HA bucket — tip-back, raise, dump, lower — is handled by a single conveniently located lever. It's the simplest, easiest bucket control available. Smooth hydraulic brakes, full anti-friction steering mechanism and torque-converter drive makes the model HA easy to operate at high output rates the full shift.

**THE FRANK G. HOUGH CO.**  
733 Sunnyside Ave., Libertyville, Ill.

Send data on "PAYLOADER" tractor-shovels

- ☐ Model HA (18 cu. ft.) and HAH (1 cu. yd.)  
☐ Larger models up to  $2\frac{1}{4}$  cu. yd.

Name

Title

Company

Street

City

State

25

Greater productivity on sand handling work is only half the story of the Model HA "PAYLOADER". Its versatility is also valuable to many owners, because quickly-attached floor sweeper, fork-lift, and pusher fork attachments, plus special buckets are available to do many other jobs. You get more value in *any* "PAYLOADER" model because more "PAYLOADER" units are in service than all other wheeled tractor shovels combined, and there's a "PAYLOADER" Distributor ready to serve you right.



**PAYLOADER®**

MANUFACTURED BY  
**THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.**  
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY





# *Trabon*

## LUBRICATION SYSTEM

### keeps veteran mill rolling

Before starting up in the fall of 1936, this rolling mill was equipped with a Trabon Centralized Lubrication System, shown in red.

Each bearing has received measured amounts of grease at the correct time, day in and day out, for these twenty years. Because lubrication has been automatically performed by a Centralized Trabon System, bearing failure has been virtually non-existent.

How is your equipment lubricated? Only a Trabon System can bring you all these advantages:

- 1** Save dollars. The number of man hours saved in a few months will pay for a Trabon System.
- 2** Reduce down time. A Trabon System lubricates while the machine is running with no hazard to the operator.
- 3** Positive check on lubrication. A Trabon System automatically indicates any stoppage of lubrication and provides a simple method of tracing the trouble.
- 4** Extend machine life. A Trabon System lubricates every point correctly, eliminating burned out bearings due to improper lubrication.



In the Trabon line of oil and grease systems you will find a system that exactly suits your equipment. May we send you some literature on the subject?

*Trabon* "Centralized" OIL AND GREASE SYSTEMS  
*"Meterflo"* CIRCULATING OIL SYSTEMS

# *Trabon*

## ENGINEERING CORPORATION

28815 AURORA ROAD • SOLON, OHIO

*Oil and Grease Systems*



#### The "Kitty Hawk" of Automation

The very first automatic feature in motor control was the no-voltage release in the Cutler-Hammer Bulletin 10 Starter of 1892. The starter handle was held in the "on" position by an electromagnet and returned automatically to the "off" position whenever the power supply failed. This protected men at machines from sudden unexpected restarting, motors against burn-out due to the inrush of uncontrolled current.

## Tomorrow dawned 65 years ago!

New ideas are seldom as new as most people think. Automation is typical. If automation is tomorrow's way of manufacturing, this *tomorrow* dawned 65 years ago with the beginning of automatic electrical control. What is now possible in automation is not the result of sudden discovery but the application of control techniques and equipment developed through *decades* of experience.

This is an important consideration to anyone interested in automation planning. Automation is always a major project. It requires a large investment in planning and engineering . . . and an outlay for equipment often without precedence in a company's experience. The rewards for success can be momentous. But the penalties for mistakes can be disastrous.

Able management has been quick to realize the safeguards provided by maximum automatic control experience in even the earliest exploratory discussions of automation. As a consequence, Cutler-Hammer engineers and Cutler-Hammer Automatic Control have already helped in turning "visionary" plans into astounding automation realities in such diverse industries as cement, glass, paper, rubber, sugar, steel, textiles and automotive.

If automation is a "must" in your future, now is the time to act to make it a competitive advantage rather than a handicap.

It cannot be rushed into being; it always requires a vast amount of skillful planning and ingenious engineering. Invite Cutler-Hammer engineers to participate. Their experience is almost sure to speed your project. It can help you avoid false starts, prevent impractical or needlessly complicated constructions. It may even point the way to unsuspected automation possibilities, as it has for others. Write,

or wire CUTLER-HAMMER, Inc.,  
1325 St. Paul Avenue, Milwaukee  
1, Wisconsin.

